

HMT (INTERNATIONAL) LIMITED

A Govt. of India Undertaking

(OPEN TENDER)

BID DOCUMENTS

FOR SUPPLY, INSTALLATION & COMMISSIONING, TRIAL

for

Setting up of “Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”,
Majuba, South Africa.

LOT	ITEM
LOT - 1	Sheet Metal Forming Machines
LOT - 2	Punch, Shearing and cropping Machine
LOT - 3	Electro Discharge Machine (EDM) - CNC
LOT - 4	Wire Cut EDM - CNC
LOT - 5	Automatic Plastic Injection Moulding Machine
LOT - 6	CNC 3D Coordinate Measuring Machine
LOT - 7	3D Scanner and 3D Printer
LOT - 8	Advanced Process Welder, Capable for GTAW, SMAW and GMAW (Pulse).
LOT - 9	Welding Machines
LOT - 10	Hydraulic & Pneumatic items
LOT - 11	Electrical Machine Trainers
LOT - 12	Electrical Industrial Trainers
LOT - 13	Electronic Trainers
LOT - 14	Electrical & Electronic Panels & Trainers
LOT - 15	Electrical Meters
LOT - 16	Electrical Appliances
LOT - 17	Furniture – Electrical

LOT	ITEM
LOT – 18	Tools For Common Facility Workshop
LOT – 19	Drill Bits & Other Tools for Common Facility Workshop
LOT - 20	Consumables For Common Facility Workshop
LOT – 21	Tools for Millwright
LOT - 22	Tools for Boilermaker
LOT - 23	Set of Tool Holders for CNC Machines
LOT - 24	Mechanical Press 10 Ton Capacity
LOT - 25	Millwright lab Equipment
LOT – 26	Refrigeration & Air conditioning Trainer Equipment
LOT – 27	Equipment for Refrigeration
LOT – 28	Measuring Tools
LOT – 29	Bandsaw Machine
LOT – 30	Mechatronics and Robotics Equipment
LOT - 31	Industry 4.0 setup in manufacturing module(Portable)
LOT - 32	Pillar Drill Machines
LOT - 33	Work Benches

TENDER NO: HMTI/PROJ/GMCOS/SA/001/2026 Dated 19.02.2026

CLOSING ON: 12.03.2026, TIME 11.00 HRS

TECHNICAL BID OPENING ON: 12.03.2026, TIME 11.30 HRS

PLACE: HMT(I) Board Room, HMT Bhavan, No.59, Bellary Road, Bangalore.

The Tender fee is nil and the Bidders shall submit Earnest Money Deposit as per Section I Clause 3.2 along with Technical bids in Envelope-I. However, the MSE bidders (OEM / Service provider) registered with NSIC/MSME will be exempted from payment of EMD on submission of Valid Registration Certificate. EMD in the form of Cheque/Bank Guarantee is not allowed.

ATTENTION

- Only sealed Tenders shall be entertained. All joints of envelope should be sealed with wax with individual design stamped on it or with cello tape to ensure it is tamper proof.
- Do not use window envelope.
- Technical Bid and Commercial Bid to be put in a separate cover super-scribing Tender Ref. No., Date, Submission date, Lot number and Bidder address on the top of envelope. **In case, the Bidder quotes for more than one lot, offers for each Lot to be submitted separately. Do not combine multiple Lots together.**
- The Bidder may depute their authorized representative to witness the tender opening for both Technical and Commercial Bids.
- For Lots – 1,2,3,4,5,6,7,8,9,10,11,12,13,14,24,26,29 & 30 if the bidder is not Manufacturer, Bidders must submit Authorization letter from Manufacturer as per Annexure 7 or else their bids will be rejected.**

HMT Bhavan, No.59, Bellary Road, Bangalore 560 032

Tel: 91- 80 - 2333 9060, Fax: 91- 80- 2333 9048

Web Site: www.hmti.com, E-mail: projects@hmti.co.in

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SECTION I: INVITATION FOR BIDS (IFB)

HMT (International) Ltd, [HMT (I)] Bangalore invites sealed bids from eligible Indian bidders for supply, installation & commissioning, Trial of following items for the Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa. under the assistance from Government of India as per Schedule of Requirements / Scope of Supplies (SR) - (Section IV)

LOT	ITEM
LOT - 1	Sheet Metal Forming Machines
LOT - 2	Punch, Shearing and cropping Machine
LOT - 3	Electro Discharge Machine (EDM) - CNC
LOT - 4	Wire Cut EDM - CNC
LOT - 5	Automatic Plastic Injection Moulding Machine
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LOT – 29	Bandsaw Machine
LOT – 30	Mechatronics and Robotics Equipment
LOT - 31	Industry 4.0 setup in manufacturing module(Portable)
LOT - 32	Pillar Drill Machines
LOT - 33	Work Benches

- HMT(I) invites sealed bids from eligible bidders for the Supplies as above with details listed in Section IV.
For Lots – 1,2,3,4,5,6,7,8,9,10,11,12,13,14,24,26,29 & 30 if the bidder is not Manufacturer, Bidders must submit Authorization letter from Manufacturer as per Annexure 7 or else their bids will be rejected.

Bidders shall participate for any number of lots but Part bidding within the lot is not allowed.

In case, the Bidder quotes for more than one lot, offers for each Lot to be submitted separately. Do not combine multiple Lots together.

- Contact information**
The Assistant General Manager
HMT (International) Limited,
59, Bellary Road,
Bangalore-560032, INDIA
Tel No.: 080- 23339060
E-mail: projects@hmti.co.in

3. Two bid System

The two-bid system will be followed. The bidder must submit his offer in two separate sealed envelopes as explained below:

Envelope I: “Technical bid”:

NO PRICE SHOULD BE INDICATED ANYWHERE IN THE TECHNICAL BID. IN CASE IT IS FOUND THE OFFER SHALL BE SUMMARILY REJECTED.

The sealed envelope shall be clearly marked “**Part I - Technical bid**”, indicating Tender No., Lot Number, Closing Date & Time, and bidder address duly filled (separately for each Lot).

The envelope-I should be duly sealed on all joints with wax with an individual design stamped in it or tamperproof sealing using cello tape.

This part shall include / indicate the following:

1. The Bidder shall provide requisite documentary evidence for pre-qualification criteria as stated below, **failing which, the Bids may result in rejection:**
 - Bidder's Average minimum Turnover / annum for past 3 years (i.e. FY 2022-23, 2023-24 & 2024-25) shall be at least as mentioned below against each Lot.

LOT	Average Turnover in Rs.	Average Turnover in Rs.
LOT - 1	2,92,20,000	Two Crore Ninety-Two Lakh Twenty Thousand
LOT - 2	60,00,000	Sixty Lakh
LOT - 3	87,00,000	Eighty-Seven Lakh
LOT - 4	78,00,000	Seventy-Eight Lakh
LOT - 5	1,52,70,000	One Crore Fifty-Two Lakh Seventy Thousand
LOT - 6	94,80,000	Ninety-Four Lakh Eighty Thousand
LOT - 7	60,00,000	Sixty Lakh
LOT - 8	1,10,40,000	One Crore Ten Lakh Forty Thousand
LOT - 9	1,33,35,000	One Crore Thirty-Three Lakh Thirty-Five Thousand
LOT - 10	1,35,00,000	One Crore Thirty-Five Lakh
LOT - 11	2,73,05,898	Two Crore Seventy-Three Lakh Five Thousand Eight Hundred Ninety-Eight
LOT - 12	2,85,35,898	Two Crore Eighty-Five Lakh Thirty-Five Thousand Eight Hundred Ninety-Eight
LOT - 13	10,00,000	Ten Lakh
LOT - 14	20,00,000	Twenty Lakh
LOT - 15	20,00,000	Twenty Lakh
LOT - 16	5,00,000	Five Lakh
LOT - 17	10,00,000	Ten Lakh
LOT - 18	40,00,000	Forty Lakh
LOT - 19	60,00,000	Sixty Lakh
LOT - 20	10,00,000	Ten Lakh
LOT - 21	10,00,000	Ten Lakh
LOT - 22	20,00,000	Twenty Lakh
LOT - 23	5,00,000	Five Lakh
LOT - 24	20,00,000	Twenty Lakh
LOT - 25	1,05,00,000	One Crore Five Lakh
LOT - 26	2,09,00,295	Two Crore Nine Lakh Two Hundred Ninety-Five
LOT - 27	60,00,000	Sixty Lakh
LOT - 28	82,07,130	Eighty-Two Lakh Seven Thousand One Hundred Thirty
LOT - 29	60,00,000	Sixty Lakh
LOT - 30	2,80,80,000	Two Crore Eighty Lakh Eighty Thousand
LOT - 31	60,00,000	Sixty Lakh
LOT - 32	60,00,000	Sixty Lakh
LOT - 33	82,23,000	Eighty-Two Lakh Twenty-Three Thousand

- The Bidder shall quote for all the Lots or any of the lots mentioned under Scope of Supply. However, part bidding within the lots is not allowed.
- Bidder must have minimum 3 years past experience in supply of similar items specified in the Scope of Supply in the last 5 years. Attach Purchase Order copies for each year. If bidder is not Manufacturer, bidder can submit minimum 3 years past experience of supply of similar items of the manufacturer as documentary evidence.

- Bidder should submit satisfactory certificate from at least 2 reputed clients to whom similar nature of supplies has been rendered in the last 5 years. If bidder is not Manufacturer, bidder can submit satisfactory certificate from 2 reputed clients of manufacturer as documentary evidence.
2. The Bidder shall submit Earnest Money Deposit as indicated below against each lot in the form of Demand Draft / Digital Transfer drawn in favour of HMT (International) Limited payable at Bangalore in separate envelopes for each lot in the Technical Bid.

LOT	EMD in Rs.	EMD in Rs.
LOT - 1	1,94,800	One Lakh Ninety Four Thousand Eight Hundred
LOT - 2	34,000	Thirty Four Thousand
LOT - 3	58,000	Fifty Eight Thousand
LOT - 4	52,000	Fifty Two Thousand
LOT - 5	1,01,800	One Lakh One Thousand Eight Hundred
LOT - 6	63,200	Sixty Three Thousand Two Hundred
LOT - 7	48,800	Forty Eight Thousand Eight Hundred
LOT - 8	73,600	Seventy Three Thousand Six Hundred
LOT - 9	88,900	Eighty Eight Thousand Nine Hundred
LOT - 10	90,000	Ninety Thousand
LOT - 11	1,82,039	One Lakh Eighty Two Thousand Thirty Nine
LOT - 12	1,90,239	One Lakh Ninety Thousand Two Hundred Thirty Nine
LOT - 13	4,838	Four Thousand Eight Hundred Thirty Eight
LOT - 14	11,503	Eleven Thousand Five Hundred Three
LOT - 15	11,904	Eleven Thousand Nine Hundred Four
LOT - 16	1,563	One Thousand Five Hundred Sixty Three
LOT - 17	5,864	Five Thousand Eight Hundred Sixty Four
LOT - 18	24,173	Twenty Four Thousand One Hundred Seventy Three
LOT - 19	42,419	Forty Two Thousand Four Hundred Nineteen
LOT - 20	8,172	Eight Thousand One Hundred Seventy Two
LOT - 21	9,551	Nine Thousand Five Hundred Fifty One
LOT - 22	10,422	Ten Thousand Four Hundred Twenty Two
LOT - 23	1,700	One Thousand Seven Hundred
LOT - 24	19,928	Nineteen Thousand Nine Hundred Twenty Eight
LOT - 25	70,000	Seventy Thousand
LOT - 26	1,39,335	One Lakh Thirty Nine Thousand Three Hundred Thirty Five
LOT - 27	38,516	Thirty Eight Thousand Five Hundred Sixteen
LOT - 28	54,714	Fifty Four Thousand Seven Hundred Fourteen
LOT - 29	47,100	Forty Seven Thousand One Hundred
LOT - 30	1,87,200	One Lakh Eighty Seven Thousand Two Hundred
LOT - 31	40,200	Forty Thousand Two Hundred
LOT - 32	31,000	Thirty One Thousand
LOT - 33	54,820	Fifty Four Thousand Eight Hundred Twenty

- In case, the Bidder quotes for more than one lot, the Earnest Money Deposit shall be sum of the value given against each lots.
- **However, the MSE bidders (OEM / Service provider) registered bidders registered with NSIC/MSME will be exempted from payment of EMD on submission of Valid Registration Certificate.**
- The Bidder shall quote for all the Lots or any lots mentioned under Scope of Supply. However, part bidding within the lots is not allowed.

3. The bidder must be a manufacturer or dealer or HMTI vendor.
4. Technical bids without EMD will be rejected. **However, the MSE bidders (OEM / Service provider) registered bidders registered with NSIC/MSME will be exempted from payment of EMD on submission of Valid Registration Certificate.**
5. Duly filled Technical bid for each Lot separately with proper seal and signature of the authorized person on each page of the bid submitted.
6. Complete Scope of Supplies with all necessary details and acceptance of commercial terms and conditions.
7. Make / Model for each of the item to be specified and the Catalogues to be enclosed.
8. Bids shall be valid for a minimum period of 90 (ninety) days from the last date of submission.
9. Furnish acceptance for providing Performance Bank Guarantee for 5% of the contract value in the event of tender being awarded.
10. Point-wise details for the services/requirements/details required in the bid documents shall be furnished. If there are any deviations, the same should be clearly specified in Annexure-2 of Section-V.
11. Self attested copy of GST registration certificate as applicable.
12. List of customers both domestic & overseas to whom similar supplies have been provided in the past 5 years in the prescribed format Section-V, Annexure-3.
13. Satisfactory certificate from at least 2 reputed client to whom similar nature of supplies has been rendered.
14. Vendor Registration form – Section – V, Annexure – 5 duly filled {Only for New Vendors of HMT(I)}.
15. Copy of ISO-9000 Certificate, if applicable.
16. Payment Terms. As per clause 13 in Section-III.
17. A copy of “Un-Priced Section – V, Annexure–1” i.e., a copy of the Price Schedule **without the price details**.

In case of vendors opting for Digital transfer of EMD, A/c details of HMT(International) Ltd is as detailed below:

Bank	State Bank Of India,
Account No	33120672518
Branch	Overseas Branch (06861),
Branch Address	Commercial Clients Group,LHO Compound, # 65, St. Mark's Road, Bengaluru - 560001.
IFSC Code	SBIN0006861
Swift code	SBININBB112
MICR Code	560002056

Envelope II: “COMMERCIAL BID”:

This sealed envelope shall contain price details. This envelope shall be clearly marked “**Part II - Commercial Bid**”, indicating Tender No., Closing Date & Time, Lot Number and bidder address duly filled.

The Envelope – II should be duly sealed on all joints with wax with an individual design stamped on it or tamperproof sealing using cello tape.

- Prices should be offered in **Indian Rupees only**. Should furnish break up of price as required in Section V; Annexure–I. The prices quoted shall be for **F.O.R Nhava Sheva port** and considered firm and not subject to any change.
- All prices & other information like discount etc., having a bearing on the prices shall be written both in figures & words in the prescribed offer form. In the event of difference, the price in words shall be valid and binding. **If any GST is applicable, the same should be indicated separately.**
- The terms of payment for supplies will be as indicated under clause 13 in Section-III – Terms and conditions of the Contract. The bidder must accept the payment terms.
- The bidder should quote their lowest possible price.
- HMT(I) shall award the contract to the eligible bidder whose technical bid has been accepted and determined as the lowest evaluated Commercial Bid (L1) on lot wise.

4. Date of submission of bids and opening of the Technical bid:

Both the envelopes (Part I & II) Lot-wise shall be put in one cover, duly sealed on all joints with wax with an individual design stamped on it, or put cello tape to ensure it is tamper proof and super scribing Tender No., closing date & time, opening date & time, Lot number and Bidder address.

The envelopes which are not sealed will be rejected straightaway/summarily.

The sealed bids should be dropped in the tender box provided in the HMT(I) office and ensure delivery **on or before 1100 hrs (IST) on the closing date**. Late offers will not be considered.

Last date for submission of bids: 12th March, 2026 up to 11.00 hrs. Technical bids will be opened on 12th March, 2026 at 11.30 hrs in the Board room of HMT(I) office, Bangalore.

END OF SECTION I

SECTION II- INSTRUCTIONS TO BIDDERS (ITB)

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1	Definitions and Interpretation The “HMT(I)” / “BUYER” means: HMT(International) Limited, No.59, Bellary Road, Bangalore-560 032. The “Supplier” means any firm/institute/company to whom the contract is awarded. “SITE” means Majuba TVET College, Majuba West campus, Majuba, South Africa where the supplies are required to be supplied. “PROJECT” means Setting up of “Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.																																																																																													
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2.1	The supplies offered should be in accordance with the stipulated requirements in the “Scope of Supply”. The bidder shall indicate his compliance or non-compliance against each of the requirements.																																																																																													
3	Place of Delivery of supplies: All supplies are to be delivered to HMT(I)’s shipping agent at Nhava Sheva Mumbai Port as per the instructions given by HMT(I) at the time of dispatch.																																																																																													
4	Criteria for prequalification of Bidder <u>The Bidder shall satisfy the following prequalification criteria:</u> The Bidder shall provide satisfactory documentary evidence acceptable to HMT(I) to show that:																																																																																													
4.1	The Bidder’s Average minimum Turnover / annum for past 3 years (i.e. FY 2022-23, 2023-24 & 2024-25) shall be at least as mentioned below against each Lot. The Bidders shall furnish documentary evidence such as CA certificate / audited accounts. <table><tr><th>LOT</th><th>Average Turnover in Rs.</th><th>Average Turnover in Rs.</th></tr><tr><td>LOT - 1</td><td>2,92,20,000</td><td>Two Crore Ninety-Two Lakh Twenty Thousand</td></tr><tr><td>LOT - 2</td><td>60,00,000</td><td>Sixty Lakh</td></tr><tr><td>LOT - 3</td><td>87,00,000</td><td>Eighty-Seven Lakh</td></tr><tr><td>LOT - 4</td><td>78,00,000</td><td>Seventy-Eight Lakh</td></tr><tr><td>LOT - 5</td><td>1,52,70,000</td><td>One Crore Fifty-Two Lakh Seventy Thousand</td></tr><tr><td>LOT - 6</td><td>94,80,000</td><td>Ninety-Four Lakh Eighty Thousand</td></tr><tr><td>LOT - 7</td><td>60,00,000</td><td>Sixty Lakh</td></tr><tr><td>LOT - 8</td><td>1,10,40,000</td><td>One Crore Ten Lakh Forty Thousand</td></tr><tr><td>LOT - 9</td><td>1,33,35,000</td><td>One Crore Thirty-Three Lakh Thirty-Five Thousand</td></tr><tr><td>LOT - 10</td><td>1,35,00,000</td><td>One Crore Thirty-Five Lakh</td></tr><tr><td>LOT - 11</td><td>2,73,05,898</td><td>Two Crore Seventy-Three Lakh Five Thousand Eight Hundred Ninety-Eight</td></tr><tr><td>LOT - 12</td><td>2,85,35,898</td><td>Two Crore Eighty-Five Lakh Thirty-Five Thousand Eight Hundred Ninety-Eight</td></tr><tr><td>LOT - 13</td><td>10,00,000</td><td>Ten Lakh</td></tr><tr><td>LOT - 14</td><td>20,00,000</td><td>Twenty Lakh</td></tr><tr><td>LOT - 15</td><td>20,00,000</td><td>Twenty Lakh</td></tr><tr><td>LOT - 16</td><td>5,00,000</td><td>Five Lakh</td></tr><tr><td>LOT – 17</td><td>10,00,000</td><td>Ten Lakh</td></tr><tr><td>LOT – 18</td><td>40,00,000</td><td>Forty Lakh</td></tr><tr><td>LOT – 19</td><td>60,00,000</td><td>Sixty Lakh</td></tr><tr><td>LOT - 20</td><td>10,00,000</td><td>Ten Lakh</td></tr><tr><td>LOT – 21</td><td>10,00,000</td><td>Ten Lakh</td></tr><tr><td>LOT - 22</td><td>20,00,000</td><td>Twenty Lakh</td></tr><tr><td>LOT - 23</td><td>5,00,000</td><td>Five Lakh</td></tr><tr><td>LOT - 24</td><td>20,00,000</td><td>Twenty Lakh</td></tr><tr><td>LOT – 25</td><td>1,05,00,000</td><td>One Crore Five Lakh</td></tr><tr><td>LOT – 26</td><td>2,09,00,295</td><td>Two Crore Nine Lakh Two Hundred Ninety-Five</td></tr><tr><td>LOT – 27</td><td>60,00,000</td><td>Sixty Lakh</td></tr><tr><td>LOT – 28</td><td>82,07,130</td><td>Eighty-Two Lakh Seven Thousand One Hundred Thirty</td></tr><tr><td>LOT – 29</td><td>60,00,000</td><td>Sixty Lakh</td></tr><tr><td>LOT – 30</td><td>2,80,80,000</td><td>Two Crore Eighty Lakh Eighty Thousand</td></tr></table>	LOT	Average Turnover in Rs.	Average Turnover in Rs.	LOT - 1	2,92,20,000	Two Crore Ninety-Two Lakh Twenty Thousand	LOT - 2	60,00,000	Sixty Lakh	LOT - 3	87,00,000	Eighty-Seven Lakh	LOT - 4	78,00,000	Seventy-Eight Lakh	LOT - 5	1,52,70,000	One Crore Fifty-Two Lakh Seventy Thousand	LOT - 6	94,80,000	Ninety-Four Lakh Eighty Thousand	LOT - 7	60,00,000	Sixty Lakh	LOT - 8	1,10,40,000	One Crore Ten Lakh Forty Thousand	LOT - 9	1,33,35,000	One Crore Thirty-Three Lakh Thirty-Five Thousand	LOT - 10	1,35,00,000	One Crore Thirty-Five Lakh	LOT - 11	2,73,05,898	Two Crore Seventy-Three Lakh Five Thousand Eight Hundred Ninety-Eight	LOT - 12	2,85,35,898	Two Crore Eighty-Five Lakh Thirty-Five Thousand Eight Hundred Ninety-Eight	LOT - 13	10,00,000	Ten Lakh	LOT - 14	20,00,000	Twenty Lakh	LOT - 15	20,00,000	Twenty Lakh	LOT - 16	5,00,000	Five Lakh	LOT – 17	10,00,000	Ten Lakh	LOT – 18	40,00,000	Forty Lakh	LOT – 19	60,00,000	Sixty Lakh	LOT - 20	10,00,000	Ten Lakh	LOT – 21	10,00,000	Ten Lakh	LOT - 22	20,00,000	Twenty Lakh	LOT - 23	5,00,000	Five Lakh	LOT - 24	20,00,000	Twenty Lakh	LOT – 25	1,05,00,000	One Crore Five Lakh	LOT – 26	2,09,00,295	Two Crore Nine Lakh Two Hundred Ninety-Five	LOT – 27	60,00,000	Sixty Lakh	LOT – 28	82,07,130	Eighty-Two Lakh Seven Thousand One Hundred Thirty	LOT – 29	60,00,000	Sixty Lakh	LOT – 30	2,80,80,000	Two Crore Eighty Lakh Eighty Thousand
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LOT - 13	10,00,000	Ten Lakh																																																																																												
LOT - 14	20,00,000	Twenty Lakh																																																																																												
LOT - 15	20,00,000	Twenty Lakh																																																																																												
LOT - 16	5,00,000	Five Lakh																																																																																												
LOT – 17	10,00,000	Ten Lakh																																																																																												
LOT – 18	40,00,000	Forty Lakh																																																																																												
LOT – 19	60,00,000	Sixty Lakh																																																																																												
LOT - 20	10,00,000	Ten Lakh																																																																																												
LOT – 21	10,00,000	Ten Lakh																																																																																												
LOT - 22	20,00,000	Twenty Lakh																																																																																												
LOT - 23	5,00,000	Five Lakh																																																																																												
LOT - 24	20,00,000	Twenty Lakh																																																																																												
LOT – 25	1,05,00,000	One Crore Five Lakh																																																																																												
LOT – 26	2,09,00,295	Two Crore Nine Lakh Two Hundred Ninety-Five																																																																																												
LOT – 27	60,00,000	Sixty Lakh																																																																																												
LOT – 28	82,07,130	Eighty-Two Lakh Seven Thousand One Hundred Thirty																																																																																												
LOT – 29	60,00,000	Sixty Lakh																																																																																												
LOT – 30	2,80,80,000	Two Crore Eighty Lakh Eighty Thousand																																																																																												

SECTION II- INSTRUCTIONS TO BIDDERS (ITB)

		LOT – 31	60,00,000	Sixty Lakh	
		LOT – 32	60,00,000	Sixty Lakh	
		LOT - 33	82,23,000	Eighty-Two Lakh Twenty-Three Thousand	
4.2	Bidder must have minimum 3 years past experience in supply of similar items specified in the Scope of Supply in the last 5 years. Attach Purchase Order copies for each year. If bidder is not Manufacturer, bidder can submit minimum 3 years past experience of supply of similar items of the manufacturer as documentary evidence.				
4.3	Bidder should submit satisfactory certificate from at least 2 reputed clients to whom similar nature of supplies has been rendered in the last 5 years. If bidder is not Manufacturer, bidder can submit satisfactory certificate from 2 reputed clients of manufacturer as documentary evidence.				
4.4	Bidder who does not submit the above required information along with documentary evidence at the time of bidding; their bid will be rejected.				
5	Earnest Money Deposit				
5.1	Earnest Money Deposit for amount as stipulated below shall accompany Technical bid documents of tender.				
		LOT	EMD in Rs.	EMD in Rs.	
		LOT - 1	1,94,800	One Lakh Ninety Four Thousand Eight Hundred	
		LOT - 2	34,000	Thirty Four Thousand	
		LOT - 3	58,000	Fifty Eight Thousand	
		LOT - 4	52,000	Fifty Two Thousand	
		LOT - 5	1,01,800	One Lakh One Thousand Eight Hundred	
		LOT - 6	63,200	Sixty Three Thousand Two Hundred	
		LOT - 7	48,800	Forty Eight Thousand Eight Hundred	
		LOT - 8	73,600	Seventy Three Thousand Six Hundred	
		LOT - 9	88,900	Eighty Eight Thousand Nine Hundred	
		LOT - 10	90,000	Ninety Thousand	
		LOT - 11	1,82,039	One Lakh Eighty Two Thousand Thirty Nine	
		LOT - 12	1,90,239	One Lakh Ninety Thousand Two Hundred Thirty Nine	
		LOT - 13	4,838	Four Thousand Eight Hundred Thirty Eight	
		LOT - 14	11,503	Eleven Thousand Five Hundred Three	
		LOT - 15	11,904	Eleven Thousand Nine Hundred Four	
		LOT - 16	1,563	One Thousand Five Hundred Sixty Three	
		LOT – 17	5,864	Five Thousand Eight Hundred Sixty Four	
		LOT – 18	24,173	Twenty Four Thousand One Hundred Seventy Three	
		LOT – 19	42,419	Forty Two Thousand Four Hundred Nineteen	
		LOT - 20	8,172	Eight Thousand One Hundred Seventy Two	
		LOT – 21	9,551	Nine Thousand Five Hundred Fifty One	
		LOT - 22	10,422	Ten Thousand Four Hundred Twenty Two	
		LOT - 23	1,700	One Thousand Seven Hundred	
		LOT - 24	19,928	Nineteen Thousand Nine Hundred Twenty Eight	
		LOT – 25	70,000	Seventy Thousand	
		LOT – 26	1,39,335	One Lakh Thirty Nine Thousand Three Hundred Thirty Five	
		LOT – 27	38,516	Thirty Eight Thousand Five Hundred Sixteen	
		LOT – 28	54,714	Fifty Four Thousand Seven Hundred Fourteen	
		LOT – 29	47,100	Forty Seven Thousand One Hundred	
		LOT – 30	1,87,200	One Lakh Eighty Seven Thousand Two Hundred	
		LOT – 31	40,200	Forty Thousand Two Hundred	
		LOT – 32	31,000	Thirty One Thousand	
		LOT - 33	54,820	Fifty Four Thousand Eight Hundred Twenty	
	The Earnest Money Deposit shall be in a crossed Bank Draft/Digital Transfer in favour of HMT (International) Ltd, Payable at Bangalore.				

SECTION II- INSTRUCTIONS TO BIDDERS (ITB)

In case, the Bidder quotes for more than one lot, the copy of the documentary proof shall be kept along with the Technical Bid documents in Envelope –I for each lots separately. However, the MSE bidders (OEM / Service provider) registered bidders registered with NSIC/MSME will be exempted from payment of EMD on submission of Valid Registration Certificate.

For Digital transfer of EMD, A/c details of HMT(International) Ltd is as detailed below:

Bank	State Bank Of India,
Account No	33120672518
Branch	Overseas Branch (06861),
Branch Address	Commercial Clients Group, LHO Compound, # 65, St. Mark's Road, Bengaluru - 560001.
IFSC Code	SBIN0006861
Swift code	SBININBB112
MICR Code	560002056

5.2 The Earnest Money Deposit shall remain deposited with the HMT(I) for the period of 90 (ninety) days from the date of opening of tenders. If the validity of the offer is extended, the EMD shall remain with HMT(I).

5.3 No interest will be payable by the HMT(I) on the Earnest Money Deposit.

5.4 The Earnest Money deposited is liable to be forfeited if the bidder withdraw or amends, impairs or derogates from the tender in any respect within the validity of his offer.

5.5 The Earnest Money Deposit of the successful bidder will be returned **after the P.O. is released on successful Bidder and duly accepted and submission of Performance Guarantee.**

5.6 If the successful Bidder fails to furnish a contract performance guarantee, then the earnest money shall be liable to be forfeited.

5.7 The Earnest Money Deposit of all unsuccessful Bidders will be returned to the bidder by HMT(I) after finalization of contract with the successful bidder. **Bidder to furnish bank account details along with Technical Bid for the same.**

5.8 If Earnest Money for amount as stipulated in clause 5.1 is not enclosed in the Technical documents in Envelope –I, the bid will be rejected.

6 Period of validity of bids

6.1 Bids shall be valid for a minimum period of 90 days from the last date of submission.

6.2 HMT(I) may ask for the bidder's consent to extend the period of validity. Such request and the response shall be made in writing only. A bidder agreeing to the request for extension will not be permitted to modify his bid. The technical clarifications, if any, shall be furnished by Bidder within the said date and time.

7 Deadlines for submission of bids

Bids must be received by HMT(I) before the due date and time at the address specified in the tender document. In the event of the specified date for the submission of bids being declared as a holiday for HMT(I), the bid-closing deadline will stand extended to the next working day up to the same time.

7.1 HMT(I) may extend this deadline for submission of bids by amending the bid documents and same shall be suitably notified in HMT(I) website: www.hmti.com

7.2 Any bid received by HMT(I) after the deadline for submission of bids, will not be accepted and returned unopened to the bidder.

8 Opening of Commercial bids by HMT(I)

9.1 The Technical Bids will be evaluated to shortlist the eligible bidders.

9.2 Bidder whose Technical Bid is found to be acceptable and meeting the eligibility requirements as specified in "Clause 4" will be informed about the date and time of the opening of the Commercial Bid.

9.3 HMT(I) will open Commercial Bids of only the technically accepted and short listed bids, in the presence of the bidder or their authorized representative who choose to attend the bid opening, at the time and date to be informed later.

9.4 The bidder's authorized representative who attends the bid opening shall sign an attendance register as a proof of having attended the bid opening.

9.5 The bidder's name, bid prices, discounts and such other details considered as appropriate by HMT(I), will be announced at the time of opening of the Commercial Bids.

9 Comparison of Bids

Bids received against the tender will be evaluated by the Technical Evaluation Committee (TEC) for technical suitability and will be shortlisted.

9.1 Short listed Technical bids shall be considered for commercial evaluation and Commercial Bid opening.

10 Award Criteria

10.1 HMT(I) shall award the contract to the eligible bidder whose technical bid has been accepted and determined as the lowest evaluated Commercial Bid on lot wise.

SECTION II- INSTRUCTIONS TO BIDDERS (ITB)	
10.2	Should the amount put in words differs from the amount put in figures, or if there is an arithmetical error, the lesser amount shall be taken unless the difference is attributable to an obvious error, whereupon the correct amount shall be taken.
10.3	If more than one bidders quotes same lowest price, HMT(I) reserves the right to award the contract at its own discretion.
10.4	HMT(I) reserves the right to increase or decrease the quantum of supplies offered by the successful bidder at the rates & other terms and conditions offered by them. The Bidder is bound to accept the increase or decrease in the quantum of supplies during awarding the contract.
11	HMT(I)'s Right to amend Scope of Supplies
11.1	HMT(I) reserves the right to accept or reject any or all bids without assigning any reason whatsoever.
11.2	HMT(I) reserves the right to increase or decrease the scope of supplies indicated in the bid documents after the award of the tender and payment shall be made on pro-rata basis.
11.3	HMT(I) reserves the right to cancel/short close/extend the order at any given point of time due to Force Majeure or directions from the Governments of India or South Africa.
11.4	HMT(I) reserves the right to cancel / short close the order due to non-satisfactory performance by any of the service / supply offered. Cost / damages arising out of such cancellation / short closure shall have to be borne by the bidder
11.5	Buyer shall recall any of the experts deputed to the project site on non-compliance to the rule of the land or guidelines laid down by Govt. of India / Govt. of South Africa / HMT(I) or any act that does not correspond to ethical behavior. Cost / damages arising in such an event shall be borne by the bidder and shall forthwith send suitable replacement.
12	Corrupt or Fraudulent Practices.
12.1	HMT(I) requires that the bidders who wish to bid for this project have highest standards of ethics.
12.2	HMT(I) will reject a bid if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices while competing for this contract;
12.3	HMT(I) may declare a vendor ineligible, either indefinitely or for a short period, if HMT(I) is aware that the vendor has engaged in corrupt and fraudulent practice during the execution of the contract.
13	Interpretation of the clauses in the Tender Document / Contract Document In case of any ambiguity / dispute in the interpretation of any of the clauses in this Tender Document, HMT(I)'s interpretation of the clauses shall be final and binding on all parties.
14	General
14.1	All offers shall be either Computer prints or hand written neatly in indelible ink. Tenders shall be free from CORRECTION AND ERASURES, and Corrections if any, must be attested. Each page of the offer must be numbered consecutively, should bear the tender number and should be signed by the Bidder at the bottom. A reference to the total number of pages comprising offer must be made at the top right hand corner of the first page.
14.2	The Bidders must ensure that the conditions laid down for submission of offers detailed in the preceding paras, are completely and correctly fulfilled.
14.3	The submission of any offer connected with these supplies and documents shall constitute an agreement that the Bidder shall have no cause of action or claim, against HMT(I) for rejecting the offer. HMT(I) shall always be at liberty to reject or accept any offer or offers at its sole discretion.
14.4	Offers shall be deemed to be under consideration immediately after they are opened and until such time the official intimation of award of contract is made by HMT(I) to the Bidder. While the offers are under consideration, Bidders and or their representatives or other interested parties are advised to refrain from contacting HMT(I) by any means. If necessary, HMT(I) will obtain clarifications on the offers by requesting for such information from any or all the Bidders, only in writing. Bidders will not be permitted to change the contents of their offers after the offers have been opened.
14.5	In case OEM and authorized dealers / distributors participate in the same lot, only OEM offer will be considered.
14.6	Any individual(s) signing the tender and related documents should be a competent authorized person or original copy of power of authorization issued by the competent authority should accompany the tender.
14.7	The specifications / standards mentioned in tender are minimum requirement however bidder can quote same or better specifications / standards
14.8	Offers shall be as per the Instructions to Bidders and Terms & Conditions of contract given in bid documents. However the Bidder shall indicate his acceptance or otherwise against each of clause and sub clauses of the Instruction to Bidders and Terms & Condition of contract. For this purpose, the Bidder shall enclose a separate statement as per format Section-V(2) indicating only the deviations from any clause or sub clause of the Instructions to Bidders and Terms & Conditions of contract which Bidder proposes with justification for each deviation. The HMT(I), however reserves the right to accept or reject these deviations and decision there on shall be final and binding.
14.9	Bids shall be complete in all respects accompanied by detailed literature, brochures with all necessary details in ENGLISH or otherwise, the bids will not be considered.
14.10	The bidder should stamp and sign all the pages of Tender document as a proof of acceptance to all the Terms and conditions mentioned in the tender.
End of SECTION-II	

SECTION III: SPECIAL CONDITIONS OF CONTRACT (SCC)	
1	Execution: Metric System
2	Colour: As specified in the Technical Specifications.
3	Electricals: Main supply: 380/400V, 3 Ph, 50Hz AC or 220/230 V, 1 Ph, 50Hz AC Supply
4	Delivery period for supplies: F.O.R Nhava Sheva Mumbai Port within 16 weeks from the date of purchase order. Delivery is the essence of the Contract. If there is delay penalty as per clause 14 is applicable.
5	Inspection and Acceptance: The supplies will be inspected by HMT(I) as decided by HMT(I). If any of the item is found defective, HMT(I) reserves right to procure the substitute for the defective items from elsewhere at the risk and cost of the supplier and recover from the supplier the extra expenditure, if any incurred by HMT(I). Consignment shall be dispatched only after getting acceptance letter from HMT(I). The supplies will be inspected by HMT(I) by deputing HMT(I)'s quality assurance personnel to the vendor's worksite. At least 2 weeks prior intimation regarding readiness of supplies, in all respects must be furnished to HMT(I) for inspection by HMT(I) Quality Assurance Department or by its authorized representative. All equipment including packing cases must be offered for inspection. HMT(I) reserves right to inspect the items by HMT(I) and customer representative at supplier's works.
6	Re-Inspection: HMT(I) reserves the right to re-inspect the supplies, only in cases where the HMT(I) Inspection Engineers recommend for such cases after completion of modifications suggested during the inspection. All costs towards re-inspection will have to be borne by the vendor.
7	Packing: All Supplies shall be packed in wooden cases (as per international standard) suitable for road transport. Packing cases must have case-wise detailed packing list to be put inside the cases. Also, 3 copies of case wise packing list to be sent to HMT(I) immediately after packing. All loose items to be tagged with Sl. No. as per PO. Packing to be made in the presence of HMT(I) inspection engineers. All the cost towards packing and forwarding will be borne by the supplier. - All Supplies shall be packed in wooden cases suitable. Fumigation has to be done by the Supplier before dispatch and fumigation certificate is mandatory. - Machine / Equipment should be firmly fixed to the base of packing case to prevent jerking or local movement. Machine, accessories and spares are to be covered by thick silpaulin / or 1 mm thick aluminum -polythene sheets and all openings are to be sealed and vacuumised (wherever possible). All external bright/machined surfaces should be protected with coating of OKS-CORTEC VCI 369 N Rust preventive whose shelf life is not less than one year. - Packing list with respect to each case to be prepared and given to HMT(I) along with other documents. Delivery Voucher should clearly indicate packing case dimension with net and Gross weight and case number is there are more than one case. - Photographs before and after packing to be taken and sent to HMT(I). Handling of packing cases to be shown on cases. 3 copies of casewise packing list to be sent to HMT(I) immediately after packing. All loose items to be tagged with Sl. As per PO.
8	Port of Shipment and Discharge: Nhava Sheva Mumbai Port and Durban port, South Africa.
9	Freight & Insurance: Supplier to dispatch the goods on Freight Prepaid – Door Delivery basis to HMT(I) shipping agent at Nhava Sheva Mumbai Port of shipment. Transit insurance to be arranged by supplier. Supplier to inform HMT(I), details like Lorry receipt No., No. of Packing cases, Gross Weight, Net Weight etc., immediately after dispatch from works. HMT(I) shall have the right to hold up the dispatch for want of any clearance from the customer. The consignment shall be shipped through a reputed Transporters in a direct separate truck to reach HMT(I)'s shipping agent without any trans-shipment.
10	Consignee: Consignee will be intimated later
11	Invoice to: HMT (International) Limited, 59, Bellary Road, Bangalore – 560 032, India. GST No. 29AAACH8197C1ZD. A/c. GMCOS, Majuba, South Africa.
12	Price: The price shall be F.O.R Nhava Sheva Mumbai Port and considered firm and no escalation will be permitted.
13	Payment Terms for supplies: 80% payment for supplies shall be payable on 60th day from the date of delivery to our shipping agent at Nhava Sheva Mumbai Port for non-MSME Vendors. 80% payment for supplies shall be payable on 45th day from the date of delivery to our shipping agent at Nhava Sheva Mumbai Port for MSME Vendors. - Balance 20% payment for supplies shall be paid through RTGS/NEFT after successful Installation and Commissioning / handing over of all the items on physical verification of equipment / material at project site.

14	<u>Penalty for delayed Supply and Services:</u> HMT(I) reserves the right to levy penalty @ 0.5 percent of order value per week of delay beyond the scheduled deliveries / execution of the contract successfully, subject to maximum of 10% of the contract value. HMT(I) reserves the right to cancel the contract in case the delay is more than 20 weeks. The penalties, if any shall be recovered by invoking the Performance Bank Guarantee or withholding the amount out of the payments due.
15	<u>Clearance for Despatch:</u> Equipment shall be dispatched only after getting acceptance letter from HMT(I). Such clearance shall be furnished only after receipt of a certificate from Supplier stating that the snags, if any, pointed out by HMT(I) Engineer/Customer's representative have been duly attended to. HMT(I) shall have the right to hold up the dispatch for want of any clearance from the customer. The consignment shall be shipped through a reputed Transporters in a direct truck to reach HMT(I)'s shipping agent without any transshipment.
16	<u>Name & Address of the Shipping Agent:</u> Will be informed at the time of dispatch clearance by HMT(I).
17	<u>Technical Documents:</u> Supplier to forward the detailed drawings of the all machines / equipment in 3 sets, indicating details about civil work required, Electrical, Pneumatic, Water connection points etc., immediately on receipt of Purchase Order. Instruction / Operating Systems / Spare Parts Manual and other relevant documents pertaining to the Equipment must be in English and should be supplied in (3) three sets as follows : ○ 2 Sets of Manuals along with the machine / equipment ○ 1 set Manual to HMT(I), Bangalore ○ 1 Set of Calibration certificate ○ Two copies of Electrical wiring drawings (along with the machine / equipment) ○ Instructions for commissioning (One copy along with the machine / equipment) and one copy to HMT(I) ○ Final Test & Inspection Report (along with the machine / equipment)
18	<u>Bought Outs:</u> All the bought-out items such as bearings, belts, electricals, motors, contactors, switches etc., shall correspond to ISI / International Specifications and shall be of reputed make like, SKF, FENNER, SIEMENS & TELEMCHANIC etc.
19	<u>Rejection & Risk:</u> If, HMT(I) finds that the materials supplied are not of correct quality or not according to the specifications as indicated in the bid offer, then HMT(I) will be entitled to reject the machine/equipment without any cost obligation on HMT(I).
20	<u>Performance Bank Guarantee (PBG):</u> The successful bidder will be required to furnish Performance Bank Guarantee (PBG) @ 5% of the total Purchase order value, as per the format attached to this document (Refer Section – V; Annexure – 4). This bank guarantee shall remain valid for a period of 60 days beyond all contractual obligations. The PBG to be furnished by the supplier within 15 days from the date of Purchase Order.
21	<u>International Warranty:</u> The supplies shall be guaranteed against defects of material and workmanship for a period of 12 months from the date of commissioning or 15 months from the date of shipment. Until the expiry of the warranty period, the supplier is obliged to do repairs, modifications, setting right and adjustments considered necessary to guarantee the rated output and to replace any part of the machine / equipment found defective and necessitate replacement due to design, manufacture, and material defect during the warranty period at vendors cost at project site in South Africa.
23	<u>Erection & Commissioning– (LOTS – 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 24, 26, 29, 30)</u> ○ The supplier shall depute the required technical personnel for carrying out installation and providing training to the customer's personnel in operation & maintenance of items in <u>LOTS</u> at project site in South Africa. ○ HMT(I) shall arrange to provide, free furnished bachelor's accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier. ○ The supplier shall depute their personnel within 10 days from the date of intimation of readiness at project site in South Africa. ○ Necessary tools, fixtures, instruments, trail materials, consumables etc., for installation to be sent along with the items. ○ In case the technical personnel extended their period of stay beyond the stipulated/required/agreed time, the additional cost for their extended stay has to be borne by the supplier.
24	<u>Arbitration:</u> All disputes of any kind arising out of supply, acceptance, warranty maintenance etc., shall be referred after issuance of 30 days notice in writing clearly mentioning the nature of dispute to a single arbitrator to be appointed by HMT(I). The venue for arbitration shall be Bangalore.
25	<u>Jurisdiction:</u> The disputes, legal matters, court matters, if any shall be subject to Bangalore jurisdiction only.
26	<u>Force Majeure:</u> HMT(I) may consider relaxing the penalty and delivery requirements, as specified in this document, if and to the extent

	that, the delay in performance or other failure to perform its obligations under the Contract is the result of a Force Majeure. Force Majeure is defined as an event of effect that cannot reasonably be anticipated such as acts of God (like earthquakes, floods, storms etc.), acts of states, the direct and indirect consequences of wars (declared or undeclared), hostilities, national emergencies, civil commotion and strikes at successful Bidder's premises. Either party shall be excused from performance of their obligation during or to the extent that performance is prevented by the occurrence of unforeseen causes beyond the control of and without the negligence of the party claiming excuse. Such causes shall include, without limitation, strike, go slow , other concerted acts of workmen, lockout, Act of God, war, fire, explosion, action of elements, flood, epidemic, COVID, riot, sabotage, embargo, blockade, civil disturbance and Governmental restrictions or limitations etc. The party claiming excuse shall give immediate written notice thereof to the other, in any case not later that 15 (fifteen) days, following the occurrence of such event. If performance is held for a continuous period of more than 3 (three) months from the date of first notice, then the parties shall review the situation and agree upon any course of action so as to protect the interest of both.
	End of Section III

SECTION – IV: SCHEDULE OF REQUIREMENTS / SCOPE OF SUPPLIES (SR)

Schedule of Requirements / Scope of Supplies is as detailed below

LOT –1 SHEET METAL FORMING MACHINES

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	3/28	Guillotine 1 – 6 mm	Guillotine, 6mm x 3200mm, Hydraulic, Motorized Backstops with NC Control, Brand New	1
2	3/29	Guillotine 3 – 10 mm	Motorized guillotine with brake motor:	1
3	3/30	Bending brake	250 Ton Press Brake X 3200mm	1
4	3/31	Roll machine to roll 1-10mm plate		1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 2, PUNCH, SHEARING AND CROPPING MACHINE

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	3/37	Punch, Shearing and cropping Machine		1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 3 ELECTRO DISCHARGE M/C (EDM) CNC

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/74	Electro Discharge Machine (EDM)- CNC	Traverses (X, Y, Z) :300 x 200 x 250 mm	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 4 WIRE CUT EDM CNC

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/75	Wire Cut EDM - CNC		1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 5 AUTOMATIC PLASTIC INJECTION MOULDING M/C

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/78	Automatic Plastic Injection Moulding machine	Locking force:180T	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 6 CNC 3D COORDINATE MEASURING MACHINE

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/77	CNC 3D Coordinate Measuring Machine	X:500mm Y:400 mm Z:400mm	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 7 3D SCANNER AND 3D PRINTER

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/93	3D Scanner		1
2	1/94	3D Printer		1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 8, ADVANCE PROCESS WELDER, CAPABLE FOR GTAW,SMAW AND GMAW (PULSE).

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	3/32	Advanced Process Welder, Capable for GTAW, SMAW and GMAW (Pulse).	Input voltage 400 Volts 3 Phase, Current output 20 - 500 Amps, with a duty cycle of 500 Amps- 39 Volts - 50% Duty cycle	4
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 9, WELDING MACHINES

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	3/33	AC/DC TIG Welding Machines (Aluminium)	Input voltage 400 Volts 3 Phase, Output current range 20 - 300 Amps, rated output 200 Amps, 18 Volts - 100% Duty Cycle	4
2	3/34	Portable Arc Welding Machine		6
3	3/35	Submerged Arc Welding		1
4	3/36	Spot Welding Machine		1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 10, HYDRAULIC & PNEUMATIC ITEMS

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	2A/183	Hydraulics board with components and pipes		2
2	2A/184	Pneumatics board with components and pipes		2
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 11, ELECTRICAL MACHINE TRAINERS

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1.	2A/1	Electrical Machine Trainers	With flat Demo panel table top rack made using Aluminium profiles with set of panels for measurement loading and essential accessories 1) DC Integrated m/c mounted as Dynamometer & with speed/torque sensors. Must be able to work as shunt/series/compound motor as well as generator. 2) 3 phase AC integrated 300W m/c chassis mounted 3) 1 phase AC Integrated 300W motor 4) 1 phase AC Synchronous m/c. Capacity:300W Motor 5) Universal Motor AC/DC Integrated, 300W, Chassis mounted 6) Repulsion motor chassis mounted 7) Squirrel cage 3 phase AC 300W, 2 speed chassis mounted motor 8) 3 phase salient pole alternators	2 sets
2	2A/3	3 Phase AC Motor Fault Simulator	Consisting of Aluminium Profile flat demo panel with 3 phase squirrel cage induction motor 1/2 HP, 4 pole, 1500RPM, 6 terminal (delta 415Vac/star 440Vac) motor with built in thermal cutout, 3 phase sequence Indicator Panel	2
3	2A/6	Electrical Trainer	Facilitates study of transformer operation, determine its equivalent circuit, use of tertiary winding to suppress harmonics etc.	2
4	2A/7	3-Phase Induction Motor Speed Control Trainer	learning about operative characteristics of ubiquitous squirrel cage induction motor. 3 phase squirrel cage induction motor, ½ HP 4 pole, 1500RPM, 6 terminal (delta 220Vac/star 440Vac) motor with Hand held Tachometer for speed measurement.	2
5	2A/8	3-Phase Induction Motor Fault Simulator	learning about fault characteristics of squirrel cage induction motor.	2
6	2A/12	Distance Protection Relay Trainer		2
7	2A/13	Feeder Protection Relay Trainer		2
8	2A/18	Double Bus Bar Trainer		2
9	2A/22	Stepper Motor	With digital controller	2
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 12 – ELECTRICAL INDUSTRIAL TRAINERS

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1.	2A/2	Industrial Control Trainer		2
2	2A/4	House Wiring / Commercial Wiring Installation Trainer		2
3	2A/5	Electrical Control Trainer		2
4	2A/9	Power Transmission Line Trainer	Consisting of (1) Input 3 phase DOL Starter panel (2) FWD-OFF-REV, Switch Panel (4) VAR Compensation panel (dual panel) (5) Transmission line Panel - Table Top Panel (6) RLC load panel - Table Top Panel (7) 3 phase dimmer panel – Table top panel	2
5	2A/10	Electrical Power Generation set up	Consisting of 1) Input 3 phase DOL starter panel 2) FWD/REV, Star-Delta starter panel 3) Instrumentation Power supply cum Multichannel DPM panel 4) SCR Actuator (variable DC) cum sensor signal conditioning panel 5) Rotor Resistance cum 3 phase Synchronous Motor Control Panel 6) DC voltmeter and DC ammeter panel 7) Integrated AC 3 phase measurement panel 9) Resistor Load Panel 10) LC Load Panel	2
6	2A/11	Biased Differential Relay Trainer		2
7	2A/14	Over / Under Voltage Relay		2
8	2A/15	Inverse definite minimum time (IDMT) Over Current Relay Trainer		2
9	2A/16	Over / Under Frequency Relay Trainer		2
10	2A/17	Power Factor Control Relay Trainer		2
11	2A/19	Solar Technology Trainer		2
12	2A/20	Electro hydraulic Trainer		2
13	2A/21	Electro pneumatic Trainer		2
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 13 - ELECTRONIC TRAINERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2A/23	Oscilloscope	Dual Trace, 30 MHZ	2
2	2A/24	Function generator		1
3	2A/25	Discrete Component trainer		1
4	2A/26	Linear I.C. Trainer		1
5	2A/27	Digital I.C. Trainer		1
6	2A/123	Micro Processor Training kit	CPU operating @ 2,5/ 5 hz	3
7	2A/124	Digital Counter with all accessories	Measuring Frequency Range: 0-1000 MHz Measuring Time Range 10s to 1 ns.	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 14 - ELECTRICAL & ELECTRONIC PANELS & TRAINERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2A/33	E.L.C.B	5KVA (model)	1
2	2A/34	R.C.C.B	5KVA (model)	1
3	2A/35	M.C.C.B	5KVA (model)	1
4	2A/111	Single phase preventer	For 2.2kw	1
5	2A/112	Earth Leakage Switch	Safe trip	1
6	2A/80	Contactor	3 phase, 440 volt, 16 amps 2 NO & 2 NC auxiliary contactor	1
7	2A/81	Contactor	3 phase, 440 volt, 32 amps 2 NO & 2 NC auxiliary contacts	1
8	2A/82	Limit Switch - Set	Quick action with 2 NC + 1 NO, 2 NO + 1 NC, Delayed Acton with 2 NC + 1NO, 2 NO + 1 NC	1
9	2A/83	Rotary switch set	16A 500v 3 pole & 16A 500v 4 pole, Qty One each	1
10	2A/84	Knife switch	DPDT fitted with fuse terminals 16 amp	1
11	2A/85	Knife switch	TPDT fitted with fuse terminals 16 amp	1
12	2A/100	Relays - set	Cut out, Reverse current, Over load, under voltage	1 Set
13	2A/101	Starters for 3 phase, 400V, 50 cycles, A.C. Motors -set	Direct on line tester, Star delta starter, Auto Transformer type, Rotor resistance starter, soft starter, Forward reverse starter driver. Qty One each	1

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
14	2A/87	Inverter, sine wave	1 KVA Input 12 Volt DC, Output 220 volt AC with 12 battery	2
15	2A/122	DTMF Telephone Trainer		1
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 15 - ELECTRICAL METERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2A/61	Analog multi Meter	0 to 1000 M Ohms, 2.5 to 500 volt	4
2	2A/29	Digital Multi meter		8
3	2A/62	A.C. Voltmeter, MI	0-250-500 V AC	2
4	2A/63	Milli Voltmeter centre zero	100-0-100 m volt	2
5	2A/64	D.C Milli ammeter	0 - 500 mA	2
6	2A/65	D.C. Ammeter MC	0-1 A	2
7	2A/66	Ammeter MC	0-5 A	2
8	2A/67	Ammeter MC	0-15-25 A	2
9	2A/68	A.C. Ammeter MI	0-5A	2
10	2A/69	A.C. Ammeter MI	0-15-25 A	2
11	2A/70	K.W. Meter	0-1-3 Kw, 2.5/5A portable	2
12	2A/71	A.C. Energy Meter	Single phase, 5A, 230V, Induction Type	2
13	2A/72	Single Phase power factor meter	Digital	2
14	2A/73	Frequency Meter	Digital	2
15	2A/98	Flux meter	EMF Tester	2
16	2A/99	Lux meter	Portable digital type, 0 - 50000 lux range	2
17	2A/114	Clamp on Ammeter	600A	2
18	2A/77	Tong tester/ Clamp meter	0-5-10A to measure 0-250-500v,	2
19	2A/30	Megger set	500 Volts & 1000 Volts, Generator type, Qty One each	2

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
20	2A/78	Wheat stone bridge	Complete with galvanometer and battery	2
1	2A/86	DC power supply	0 – 100 volt, 5 amp	2
22	2A/88	Servo Voltage Stabilizer	Input 150-230 volt AC, Output 220 Volt AC 1KVA	2
23	2A/109	Auto transformer	3.5kW. 415V, 3phase	1
24	2A/117	Earth Resistance Tester	2000 Ohm	2
25	2A/89	Rheostat set	Tubular type of ranges 0-1 Ohm 5 Amp, 0-10 Ohm 5 Amp, 0 – 25 Ohm 1 Amp, 0 – 300 Ohm 1 Amp, 0 - 1000 Ohm 0.5Amp, Qty One each	3
26	2A/31	Battery Charger		2
27	2A/131	Motor Winding Set		1 Set
28	2A/75	Current transformer	20/5 Amp, 10/1 Amp, Qty one each	2
29	2A/76	Potential Transformer	1000/500V, 500/200 V	2
30	2A/126	Mini drill machine for P.C.B's with accessories with power supply	12V operating voltage DC	1
31	2A/120	Stabilized low voltage power supply	-50V to +50V Regulated Adjustable DC Output with Voltmeter & Ammeter, 3V, 6V, 12V Separate AC Outputs	1
32	2A/121	High Voltage Probe with meter	Maximum Measuring Voltage: 35kV or 40kV, Digital Type	1
33	2A/119	Radio Receiver AM & FM with FM Stereo		1
34	2A/125	Alignment tool kit	For Radio Aligning	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 16 - ELECTRICAL APPLIANCES

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1.	2A/28	Ceiling Fan	AC 230 V, 1200 mm	1
2.	2A/90	Electric Hot plate	1500W, 230V	1
3.	2A/91	Electrical Kettle	1000 watts, 230V	1
4.	2A/92	Electric Iron box	1200 watts, 230 V with temperature control	1
5.	2A/93	Immersion heater	1000W,230V	1
6.	2A/94	Geyser	25 litre – 240 V (Storage type)	1
7.	2A/95	Induction stove		1

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
8.	2A /96	Microwave Oven		1
9.	2A/97	Electric Cooker	1000W,230V	1
10.	2A/115	Domestic water pump with starter	1 HP	1
11.	2A/116	Electric Toaster	250 W Heating Element & Heating adjustment, 230 V	1
12.	2A/118	Wall Fan	18" sweep dia	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 17 – FURNITURE – ELECTRICAL

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2A/113	Booths for domestic wiring		2
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 18 TOOLS FOR COMMON FACILITY WORKSHOP

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/1	Set spanners combination 6 – 24mm	6-24mm combination set	3
2	1/2	Set socket and spanners 10 – 32mm	10-32mm 1/2 socket set	3
3	1/3	Set Of Allen Keys 18 piece Hex & Torx Star	18 piece Hex & Torx Star	3
4	1/4	Ball pin hammer 300g	Ball pin hammer 300g	15
5	1/5	Screw driver set 18 piece	set 18 piece 9 flat and 9 Philips	3
6	1/6	Screw driver set	double end	8
7	1/7	Trimming Knife	Retractable blade with steel housing	3
8	1/8	Scribers 100 – 150mm	100mm long straight to 90° bend	15
9	1/9	Square 150 mm	150mm long	15
10	1/10	Tin snips	3 Piece Set with straight, curve(left and Right)	2
11	1/11	Divider 150mm	150mm long	15
12	1/12	Inside and Outside callipers	150mm long	3
13	1/13	Jenny callipers	150mm long	3
14	1/14	Steel Ruler 150mm	steel 150mm long	15
15	1/15	Set pin punches – parallel (2.5mm – 8mm)	2.5mm-8mm set pin punch 100mm long	3
16	1/16	Cir-clip Pliers internal 200mm	200mm long	3
17	1/17	Cir-clip Pliers external 200mm	200mm long	3

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
18	1/18	Pliers combination insulated 200mm	200mm long	3
19	1/19	File Brush	230mm long	15
20	1/20	De-Burring Tool	150mm long with 5 different blades	15
21	1/21	Square 100 mm	100mm long engineering square	15
22	1/22	Scriber	200mm long with straight to 90. bent	15
23	1/23	Prick punch	5 Piece HSS 50-150mm	15
24	1/24	Chisel	16mm flat x 150mm long	15
25	1/25	Paint Brush	25mm	15
26	1/33	M6 Tap set	M6 set with 1st,2nd and 3rd cut and taper point	15
27	1/34	M8Tap set	M8 set with 1st,2nd and 3rd cut and taper point	15
28	1/35	M10 Tap set	M10 set with 1st,2nd and 3rd cut and taper point	15
29	1/36	Chuck Spanner	100mm long	15
30	1/37	Shaving Hook	300mm Long round	15
31	1/42	Running Centre		8
32	1/43	Thread Set gauge	60' and 55' Inch&Metric	8
33	1/44	Thread pitch gauge	55' & 60° Inch&Metric	8
34	1/45	Allen key 8mm	8mm straight end	8
35	1/47	Tool holders min off 3 Boring bar	10mm, 16mm and 20mm	15
36	1/49	Scriber	200mm long straight to 90' bend	8
37	1/50	Drift	drift 2-5 shank	8
38	1/51	Drill 32mm	32mm with no2 shank	15
39	1/52	Drill 28mm	28mm with no2 shank	15
40	1/53	Drill 25mm	25mm with no2 shank	15
41	1/54	Drill 16mm	16mm with no2 shank	15
42	1/55	Copper Hammer	25MM long flat sides	15
43	1/56	Knife cutting tool	1.5mm radius	15
44	1/57	Smooth/finishing cutting tool	0.5mm radius	15
45	1/59	Knurling tool	Diagonal 2-5mm three sided	15
46	1/63	Torque wrench 65 – 335Nm	65-335Nm torque wrench	3
47	1/64	C-spanner set	C-spanner set C1-6	3
48	1/65	Bearing puller set 75mm	bearing puller 3 legs hydraulic manual	3
49	1/66	Rubber mallet	flat ended	8
50	1/67	Wheel dresser		3
51	1/131	Illuminated magnifiers		5

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
52	1/132	Sine bar	200 mm	5
53	1/133	Precession level, flat type	Sensitivity 0.02/200 mm	5
54	1/134	Moarse Taper gauge - Set of Plug and ring type	MT1, MT2, MT3, MT4	5
55	1/135	Magnetic V- block	Assorted	5
56	1/136	Bevel Protractor	300mm	5
57	1/137	Parallel blocks- hardened	Set of assorted sizes	5
58	1/138	Engineer Try Square	Assorted sizes	5
59	1/139	Bevelled Edge	Blade length-100mm	2
60	1/140	Straight edge	Blade length-1000mm	2
61	1/141	Steel Rulers	300/600 mm	16
62	1/144	Letter punch	Set of 3mm& 6mm	5
63	1/145	Number punch	Set of 3mm& 6mm	5
64	1/146	Tap wrenches	Assorted sizes	5
65	1/147	Flat scrapers	20mm width	5
66	1/148	Triangular scrapers	200mm long	5
67	1/149	Hand vice	150mm jaw	8
68	1/150	Centre punch	100 mm	15
69	1/151	Set of Hammers	Nylon/Ballpein/cross pein	15
70	1/152	Hack Saw Frame Tubular	Tubular, with 20 blades	15
71	1/153	Electric Drill Gun	13mm capacity	5
72	1/154	Drill chucks	13mm capacity	5
73	1/155	Oil stones	Medium grit, 150x50x25mm	5
74	1/164	Chisel	Cold Flat 18x150	15
75	1/165	Chisel	Cross Cut 10x3x200	15
76	1/166	Chisel	Half round 10 x 250 mm	15
77	1/167	Chisel	Diamond point 10 x 200 mm	15
78	1/168	Set of files	Flat bastard 350mm	30
			Flat second cut 250 mm	
			Triangular smooth 250 mm	
			Needle file set 150 mm	
79	1/169	File card		15
80	1/170	Safety goggles		30
81	1/171	Set of callipers and Dividers	Spring/firm joint/jenny/wing compass	15
82	1/126	Feeler Guage	0.05-1mm range with se of 20 blades	5
83	1/128	Plug gauge-set	Inch and Metric Assorted sizes	5
84	1/48	Surface gauge	6-Inch thick	8
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 19 DRILL BITS & OTHER TOOLS FOR COMMON FACILITY WORKSHOP

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/26	12mm Drill	12mm with straight shank	15
2	1/27	10mm Drill	10mm with straight shank	15
3	1/28	8.5mm Drill	8.5mm with straight shank	15
4	1/29	8mm Drill	8mm with straight shank	15
5	1/30	6.8mm Drill	6.8mm with straight shank	15
6	1/31	6mm Drill	6mm with straight shank	15
7	1/32	5mm Drill	5mm with straight shank	15
8	1/58	Parting tool	2.5mm thick blade with holder	15
9	1/60	Thread cutting tool	v-threads, acme threads and square threads up to 3mm pitch	15
10	1/61	Set of boring bars	10mm, 16mm and 20mm	15
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 20 CONSUMABLES FOR COMMON FACILITY WORKSHOP

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/172	Safety lockout/tag out system		30
2	1/173	Safety boots (Pair)		30
3	1/174	Safety gloves (Pair)		30
4	1/175	Personal Protective clothing (Suit)		30
5	1/176	Safety Goggles/Face shield		30
6	1/177	Hairnet		30
7	1/178	Ear protection		30
8	1/179	Marking blue	350ml marking blue spray	10
9	1/180	Tapping paste	500g tub	10
10	1/181	Shim stock (0.01-1mm)	0.05, 0.1, 0.2, 0.25, 0.3, 0.4, 0.45, 0.5, 0.55, 0.6, 0.7, 0.75, 0.8, 0.9, 1mm set of shims	3
11	1/182	Drill bits (4mm – 10mm)	4, 4.8, 5, 5.5, 5.8, 6, 6.5, 6.8, 7, 7.5, 7.8, 8, 8.5, 8.7, 9, 9.5, 10mm straight shank drill	8
12	1/183	Set of taps (M6, M8, M10)	M6 set 1st, 2nd and 3rd cut with taper point, M8 set 1st, 2nd and 3rd cut with taper point, , M10 set 1st, 2nd and 3rd cut with taper point,	5
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 21 TOOLS FOR MILLWRIGHT

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	2A/133	Set spanners combination 6 – 24mm	6-24mm combination set round to open mouth	3
2	2A/134	Set socket and spanners 10 – 32mm	10-32mm 1/2'	3
3	2A/135	Set Of Allen Keys	metric and imperial 100mm long	3
4	2A/136	Ball pin hammer 200g	200g flat and round head	4
5	2A/137	Ball pin hammer 500g	500g flat and round head	4
6	2A/138	Prick punch	100mm long	8
7	2A/139	Cold chisel 20mm X 200mm	20mm with X 200mm long	8
8	2A/140	Screw driver set 18 piece	9 flat and 9 Philips with insulated handles	8
9	2A/141	Square 150 mm	150mm	8
10	2A/142	V-blocks	1-5/8" x 1-1/4" x 1-1/4"	8
11	2A/143	Tin snips	Combination set	8
12	2A/147	File Bastard 300mm with handle	300mm long flat with handle	8
13	2A/148	File second cut 300mm with handle	300mm long flat with handle	8
14	2A/149	File Smooth 300mm with handle	300mm long flat with handle	8
15	2A/150	File Round 300mm with handle	300mm long round with handle	8
16	2A/144	File Half round 300 mm with handle	300mm long half round with handle	8
17	2A/145	File Three-square 300 mm with handle	300mm long Three-square with handle	8
18	2A/146	File Square 300 mm with handle	300mm long square with handle	8
19	2A/151	File Flat 150 mm with handle	150mm long flat with handle	8
20	2A/152	Tap handle 150 mm	150 mm long 4-13mm tap size	8
21	2A/154	Hack saw	300 mm long	8
22	2A/155	Magnifying glass	90mm Diameter Lens	2
23	2A/156	Hand grinding machine	115mm 4 – 1/2 inch 1010W 115mm disk	2
24	2A/157	Hand baby grinder	670w 115mm disk	2
25	2A/158	File Brush	230mm long	5
26	2A/159	Paint Brush 25mm	25mm wide	5
27	2A/160	Steel Ruler 300mm	300mm long accuracy 0.5mm	8
28	2A/161	Radius Gauges	15mm-25mm radius gauge	2
29	2A/181	Protractor (Engineer)	180° steel	8
30	2A/162	Torque wrench	65-335Nm torque wrench	2
31	2A/163	C-spanner	C-spanner set C1-6	2

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
32	2A/41	Bearing puller	3 leg 12" dia	2
33	2A/164	Copper hammer	25MM flat end	8
34	2A/165	Number stamps 4mm	4mm thick	2
35	2A/166	Letter stamps 4mm	4mm thick	2
36	2A/167	Wheel dresser		1
37	2A/178	Belt tension gauge	Belt tension gauge kgf and mm	3
38	2A/180	Straight edge	1meter x 3 mm thick	8
39	2A/182	Marking off table or surface plate with angle plate		1
40	2A/194	Marking Pens		16
41	2A/195	Marking blue	350ml marking blue spary	10
42	2A/196	Tapping paste	500g tub	10
43	2A/177	Combination Square set		3
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 22 TOOLS FOR BOILERMAKER

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	3/1	Ruler 1 m	1 m	15
2	3/2	Mason square	1m	15
3	3/3	Square 300 × 200 mm		15
4	3/4	Combination square 300 mm	300mm	15
5	3/5	Trim knife	Retractable Trimming Knife + 3 Blades	15
6	3/6	G Clamp 100 mm		15
7	3/7	Centre punch	5 x 120mm Centre Punch	15
8	3/8	Bevel square		15
9	3/9	Folding ruler 600 mm / Line of Chords		15
10	3/10	Scriber	170mm	15
11	3/12	Spring divider 150 mm – 350 mm	150mm	15
12	3/13	Hammer		15
13	3/14	Trammel points		15
14	3/15	Chalk		15
15	3/16	Pipe centre finder		15
16	3/17	Fuller		15
17	3/18	Chalk Line		15
18	3/19	Chalk Divider		15
19	3/20	Tin Snips	9 Piece Set	15
20	3/24	Compass	Compass set	15
21	3/25	Measuring tape 5 m		15
22	3/26	Protractor 360	Helix Protractor 360 Degrees - 15cm	15

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
23	3/27	Flexi curve	(60cm) Flexible Curve	15
24	3/44	Marking off table		1
25	3/46	Chain block 2 ton	2 ton	2
26	3/47	Coffin block 2 ton	2 ton	2
27	3/48	Shackles 2 ton	2 ton	2
28	3/49	Chain slings 2.5 ton	2.5 ton	2
29	3/50	Wire ropes (20mm diameter)		2
30	3/51	Tirfors 2 ton	2 ton	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 23 – SET OF TOOL HOLDERS FOR CNC MACHINES

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	1/161	Set of Tool Holders for CNC Machines	Assorted	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 24 – MECHANICAL PRESS 10 TONS CAPACITY

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	1/95	Mechanical Press	10T	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 25 – MILLWRIGHT LAB EQUIPMENT

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2A/185	Key fitting apparatus		2
2	2A/186	V-belt apparatus with double v-belts		2
3	2A/187	Chain drive apparatus with chain tensioner		2
4	2A/189	Thruster brake with drum		2
5	2A/190	Spherical bearing with shaft		2
6	2A/188	Dial test apparatus with dial gauges (0.01mm increments)		2
7	2A/191	Ball bearing with shaft		2
8	2A/192	Bearing heater		2
FOR DETAILS REFER ENCLOSURE - 1				

LOT: 26 – REFRIGERATION & AIR CONDITIONING TRAINER EQUIPMENT

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2B/1	VRF VRV unit two indoor Units		1
2	2B/2	Walk-in Cooler, Trainer	3000K cal/hr	1
3	2B/3	Vapour Absorption Refrigeration Trainer		1
4	2B/5	Heat Exchanger Shell & tube type		1
5	2B/6	Heat Exchanger tube in tube type		1
6	2B/7	Refrigeration tutor		1
7	2B/8	Package Air conditioner		1
8	2B/9	Automobile Air Conditioner Trainer		1
9	2B/10	Split type Air conditioner trainer		1
10	2B/11	Deep Freezer Trainer		1
11	2B/12	Display Cabinet Trainer		1
12	2B/105	Evacuating & Refrigerant charging station comprising a) Rotary two stage vacuum pump and motor (With gas ballast & anti suck back) Manifold with gauges valves and capable of pulling vacuum upto 50 microns of Hg and with provision of connecting to a mic b) Graduated charging cylinder with provisions for temperature correction and all necessary isolating valves.		1
13	2B/116	Visi Cooler Trainer		1
14	2B/118	Ice Candy unit complete with stainless steel tank mould box thermocole insulated sun mica body agitator compressor motor etc. Temperature pressure refrigerant control gauges motor pipe fitting etc. 3000 K.Cal/hr or working model simulator.		1
15	2B/119	Air conditioning plant direct and indirect water chiller complete with all controls etc. Capacity 15000 K. cal/hr or working trainer model/simulator, Alternatively a packaged Air conditioner of similar		1
16	2B/120	Condensing unit with open type compressor air cooled evaporator condenser controls etc.	Capacity 3000 K. cal/hr	1
17	2B/4	Cut Section model: Open , Semi sealed and sealed compressor	(set of 3)	1
18	2B/107	Two stage rotary vacuum pump of capacity approx 60-100 1pm capable of evacuating to 50 microns of Hg and fitted with gas ballast anti suck valve and single phase motor.		1
FOR DETAILS REFER ENCLOSURE - 1				

LOT –27 - REFRIGERATION & AIR CONDITIONING EQUIPMENT

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. No	Ref: Enclosure	Description	Brief Specification	Qty
1	2B/127	134A Refrigerant in cylinders		2
2	2B/158	Accessories thormostatic expansion valve distributors, driers, (pencil solid core type etc.) accumulators, receivers, bellows type thermostat, HP Stat & LP Stat humidity stat, solenoid valves		1
3	2B/147	Acid test kit		1
4	2B/109	Air Compressor two stage for oil less dry air with rust proof tank assemble heater and control		1
5	2B/108	Anemometer	Vane type	1
6	2B/152	Ball Valves service valves hand shut valves	1/4" to 7/8"	2
7	2B/15	Bending spring	External type for copper tube 3 to 6 mm. Dia	4
8	2B/115	Window Air Conditioning	Capacity 3000K Cal/hr	1
9	2B/24	Box spanner	6.4 to 10 mm	2
10	2B/150	Brazing alloy rods for 1/4" to 7/8" tubes Cu to cu, Cu to steel, Cu to brass and appropriate fluxes		1
11	2B/19	Capillary plug gauge		4
12	2B/142	Circulating water pump (small)		1
13	2B/138	Components of Car AC systems. a) Wobble plate compressor with mounting brackets. b) Serpentine evaporator. c) Parallel flow condenser. d) Hoses, tubes, receive, expansion valve. e) Electrical components & wiring harness		1
14	2B/31	Compound gauge diameter 63 mm with recalibration set screw scale vacuum 76 mm pressure 15 Kg/Sq.cm		4
15	2B/154	Compressor tester for small hermetic compressor		1
16	2B/111	Descaling pump set with stainless steel impeller and housing complete with motor 1 HP and accessories.		1
17	2B/106	Dial thermometer remote controls armoured capillary dial 75 mm-50		2
18	2B/132	Dry N2 in cylinder with 2 stage regulator or commercial N2 in cylinder with drier unit and 2 stage regulator		1
19	2B/159	Electrical accessories current & potential relays start & run capacitors, PTC,s overload protector relays contractor.		1
20	2B/156	Evaporator of direct cooled refrigerator with		1

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Description	Brief Specification	Qty
		capillary heat exchanger		
21	2B/157	Evaporator of Frost free refrigerator		1
22	2B/140	Fan coil unit with water valves	(2 & 3 way)	1
23	2B/136	Filter driers for HFC-134 A for repairs retrofits		4
24	2B/125	Fin straightener / Fin comb		42
25	2B/13	Flaring tool set with Swedging	Single for tube 4.7 to 16 mm OD	4
26	2B/135	Four way manifold with gauges		1
27	2B/34	Gas leak detector for halogen gas	Gas leak detector using halogen gas	1
28	2B/126	HC refrigerant in cylinder/ disposable containers		2
29	2B/113	Heating Kit with infra red bulb	150 watt capacity	1
30	2B/155	Hermetic compressor	1.5 Ton	1
31	2B/151	Rotary Compressor		2
32	2B/38	L-Allen Key set size	1.5 to 6.4mm	4
33	2B/35	Lapping plate	250x200mm	2
34	2B/123	Micron vacuum gauge	Capable of reading upto 20 microns	2
35	2B/21	Piercing plier 6-18 mm & Piercing valves both with access fittings		2
36	2B/20	Pinch off plier / crimping plier tool	16 to 18 mm dia	2
37	2B/17	Pinch off tool	For copper tube 6 to 18 mm dia	4
38	2B/68	Pipe bending tool lever type with degree indicator for tube OD 6.4 to 16 mm		1
39	2B/16	Pipe cutter	Miniature for copper tube 6 to 18 mm dia	4
40	2B/145	Pipe threading dies & pipe vice		1
41	2B/149	Pop rivet gun		1
42	2B/131	Portable Air-LPG brazing kit with 2 Kg LPG cylinder, torches, houses, standard make. a) With straight flame. b) With Cyclone / swirl jet flame.		1
43	2B/112	Pressure testing tank with lighting arrangement pressure gauge (0-35 Kg / sq.cm) double stage		1
44	2B/30	Pressure gauge diameter 63 mm with recalibration set screw scale vacuum 76 mm pressure		4
45	2B/36	Punch hole for cutting gasket	4.7 to 16 mm dia	4
46	2B/153	Quick couplers process tube adaptor	1/4" to 7/8"	2
47	2B/18	Ratchet spanner	6.4 mm sg reversible	4
48	2B/121	Reciprocating compressor with provision of capacity control etc, for demonstration	Capacity 9000 K. cal/hr semi hermetic / open type.	1
49	2B/128	Recovery unit for R134 A refrigerants with recovering cylinders.		1
50	2B/160	Recycling Unit		1
51	2B/148	Refractometer		1
52	2B/104	Refrigerant cylinder	Capacity 2.5 Kg	2
53	2B/114	Refrigerator rotary compressor type	165 litre	1
54	2B/129	Reverse cycle AC/Heat pump	3000 K.cal/hr. Or 4500 K.cal/hr.	1

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Description	Brief Specification	Qty
55	2B/23	Ring spanner set	4.7 mm to 16 mm	5
56	2B/143	Safety gloves, eye protection glasses		4
57	2B/144	Safety shoes		20
58	2B/146	Schraeder valve core removal tool		1
59	2B/37	Scissor gasket cutting stainless steel	length 25 mm	4
60	2B/124	Sensor thermometer	Digital	2
61	2B/32	Serviceman thermometer in metal case	-30 to + 30 Deg.C.	2
62	2B/139	Shell and tube Condenser	Small capacity	1
63	2B/141	Shell and tube DX chillers (Small)		1
64	2B/33	Sling psychrometer mounted on aluminum / plastic back scale -50 Deg. C to + 50 Deg.C		1
65	2B/22	Spanner double ended	4.7 mm to 16 mm	5
66	2B/130	Split type AC	With indoor unit & outdoor units and electronic remote control	1
67	2B/69	Blow Lamp	Capacity ½ litre	2
68	2B/14	Swedging tool	Punch type set of size, for tube 4.7 to 16 mm OD	4
69	2B/39	T-Allen key set size	5/32"L & 1/8"	4
70	2B/133	Trichlorethylene bottle		1
71	2B/134	Two way manifold with gauges		1
72	2B/28	Valve key-T-Handle	4.7 & 6.4 mm Sq	4
73	2B/117	Water Cooler	Storage type	1
74	2B/110	Scraper triangular blade removable		2
75	2B/137	Sealed ex-proof components for use in HC appliances: Thermostats Sealed OLPS solid state PTC's door switches lamp holders		4
FOR DETAILS REFER ENCLOSURE - 1				

LOT -28 – MEASURING TOOLS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Description	Brief Specification	Qty
1	1/125 2A/173	Depth Micrometer	0 - 100 mm	12
2	1/121	Dial Gauge- lever type	Graduation 0.01mm	8
3	1/122	Dial Gauge- lever type	Graduation 0.002mm	8
4	1/46 1/123 2A/179	Dial gauge with magnetic base	Test Indicator Gauge accuracy 0.01mm. Magnetic Base Stand non fine adjusting	28
5	1/120	Dial Indicator	Range: 10mm	8
6	1/124	Flexi. Magnetic dial gauge stand		5
7	1/117	Inside Micrometer - caliper type	5-30mm	8
8	1/68 2A/172	Micrometer set bigger than 100mm Size: 100 to 125mm	Graduation 0.01mm	5
9	1/69	Micrometer set bigger than 100mm	Graduation 0.01mm	3

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.

Sl. No	Ref: Enclosure	Description	Brief Specification	Qty
		Size: 125 to 150 mm		
10	1/70	Micrometer set bigger than 100mm Size: 150 to 175 mm	Graduation 0.01mm	3
11	1/108 2A/168 2B/81	Micrometer Outside	0-25mm	25
12	1/109 2A/169	Micrometer Outside	25-50mm	23
13	1/110 2A/170	Micrometer Outside	50-75mm	23
14	1/111 2A/171	Micrometer Outside	75-100mm	23
15	1/112	Micrometer Outside	100-125mm	15
16	1/113	Micrometer Outside	125-150mm	15
17	1/114	Micrometer Outside	150-175mm	15
18	1/118	Micrometer Outside Digital	0-25mm	8
19	1/119	Micrometer Outside Digital	25 - 50mm	8
20	1/129	Radius gauge- set		5
21	1/38	Telescopic gauge 12.7-19		15
22	1/39	Telescopic gauge 19-32		15
23	1/40	Telescopic gauge 32-54		15
24	1/41	Telescopic gauge 54-90		15
25	1/105 2A/174	Vernier caliper	150mm, Graduation: 0.02mm	23
26	2A/175	Vernier caliper	200mm, Graduation: 0.02mm	8
27	2B/80	Vernier calipers	Length 250mm	1
28	1/106	Vernier calipers	300mm, Graduation: 0.02mm	15
29	1/107	Vernier calipers Digital	200mm	15
30	1/115 2A/176	Vernier depth gauge	300mm	8
31	1/116	Vernier Height Gauge	0-600mm	5
32	2B/82	Vernier Height Gauge	250mm	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 29 BANDSAW

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.

Sl. NO	Ref: Enclosure	Description	Brief Specification	Qty
1	1/91	Horizontal Bandsaw		1
2	1/92	Vertical Bandsaw		1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 30 MECHATRONICS AND ROBOTICS EQUIPMENT

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	2A/216	PLC trainer kit	PLC Trainer Kit including Static & Dynamic Modules	1
2	2A/217	Digital Sensor Module		1
3	2A/218	Analogue Sensor Module		1
4	2A/219	Dynamic Module	With Sensor Module and Relay Module	1
5	2A/220	Linear Transfer System	Complete workstation mounted on a aluminum profile plate with operating console, consisting of: Belt conveyor, Linear pick & place unit, Horizontal transfer unit, Transfer Module (Rotary Pick & Place Unit), 6 Station Rotary Carousal Table, Drilling module.	1
6	2A/221	Six Axis Robot	Articulated ROBOT - PC Controlled 6 Axis with pedestal base, 2.5 Kgs Payload capacity, Pneumatic Gripper, Robot Controller, Robot Controlling software.	1
7	2A/222	Robot Application Experimental Kit	With experiment table, Pneumatic chuck, Pneumatic vice, Pick & Place- Vertical stacking & Horizontal Palletizing, assembly & dismantling, Gluing experiment kit, Testing bank of push button switches, Painting kit	1
8	2A/223	Integration of robot with automation	4 Axis Assembly Robotic ARM with Pallet & Robot Controller Software, Weighing & Palletizing System With integration of Robot with Complete Workstation Mounted on a Aluminium Profile Plate, Belt Conveyor, Rotary Pick & Place Manipulator, Weighing Module and PLC	1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 31 INDUSTRY 4.0 SETUP IN MANUFACTURING MODULE(PORTABLE)

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	2A/224	Industry 4.0 setup in manufacturing module(Portable)		1
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 32. PILLAR DRILL MACHINES

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/83	Pillar Drilling Machine	Cap. 25 mm	2
2	2A/37 & 4A/24	Pillar Drilling Machine	Cap. 20 mm	3
FOR DETAILS REFER ENCLOSURE - 1				

LOT – 33. WORK BENCHES

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. #	Annex. Ref.	Description	Brief Specification	Qty
1	1/ 158	Work Benches	Twin Station with vice	4
2	1/ 157, 2A/ 193, 2B/ 122, 3/ 45 & 4A/ 37	Work Benches	Four Station with vice	31
FOR DETAILS REFER ENCLOSURE - 1				

End of Section IV

SECTION V – COMMERCIAL

Annexure – 1

PRICE SCHEDULE

LOT - 1 SHEET METAL FORMING MACHINES

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	3/28	Guillotine 1 – 6 mm	Guillotine, 6mm x 3200mm, Hydraulic, Motorized Backstops with NC Control, Brand New	1		
2	3/29	Guillotine 3 – 10 mm	Motorized guillotine with brake motor:	1		
3	3/30	Bending brake	250 Ton Press Brake X 3200mm	1		
4	3/31	Roll machine to roll 1-10mm plate		1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer's personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor's accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

***Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

1. The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
2. No erasures or alternations in the text of the offer are permitted.
3. Any correction made in offer shall be initialed by the Bidder.
4. VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT – 2, PUNCH, SHEARING AND CROPPING MACHINE

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	3/37	Punch, Shearing and cropping Machine		1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMTI) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E&C in Indian Rupees (in words):						

***Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer’s personnel in operation and maintenance of above equipment at project site in South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

- The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
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The prices quoted should be most competitive

LOT - 3 ELECTRO DISCHARGE MACHINE (EDM) - CNC

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/74	Electro Discharge Machine (EDM)-CNC	Traverses (X, Y, Z) :300 x 200 x 250 mm	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer's personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor's accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E&C in Indian Rupees (in words):						

*** Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

- The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
- No erasures or alternations in the text of the offer are permitted.
- Any correction made in offer shall be initialed by the Bidder.
- VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT - 4 WIRE CUT EDM - CNC

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/75	Wire Cut EDM - CNC		1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer's personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor's accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

*** Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

- The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
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- Any correction made in offer shall be initialed by the Bidder.
- VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT - 5 AUTOMATIC PLASTIC INJECTION MOULDING MACHINE

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/78	Automatic Plastic Injection Moulding machine	Locking force:180T	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer's personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor's accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
*Total cost of equipment including E & C in Indian Rupees (in words):						

*** Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

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The prices quoted should be most competitive

LOT - 6 CNC 3D COORDINATE MEASURING MACHINE

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/77	CNC 3D Coordinate Measuring Machine	X:500mm Y:400 mm Z:400mm	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

*** Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

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It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

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Dated:.....

Signature and seal of Authorized Signatory

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LOT – 7 3D SCANNER AND 3D PRINTER

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/93	3D Scanner		1		
2	1/94	3D Printer		1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

*** Total should include the cost towards the following:**

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- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

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LOT – 8, ADVANCED PROCESS WELDER, CAPABLE FOR GTAW,SMAW AND GMAW (PULSE).

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	3/32	Advanced Process Welder, Capable for GTAW, SMAW and GMAW (Pulse).	Input voltage 400 Volts 3 Phase, Current output 20 - 500 Amps, with a duty cycle of 500 Amps- 39 Volts - 50% Duty cycle	4		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

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LOT – 9, WELDING MACHINES

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	3/33	AC/DC TIG Welding Machines (Aluminium)	Input voltage 400 Volts 3 Phase, Output current range 20 - 300 Amps, rated output 200 Amps, 18 Volts - 100% Duty Cycle	4		
2	3/34	Portable Arc Welding Machine		6		
3	3/35	Submerged Arc Welding		1		
4	3/36	Spot Welding Machine		1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMTI) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

*** Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in South Africa.
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LOT-10, HYDRAULIC & PNEUMATIC ITEMS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2A/183	Hydraulics board with components and pipes		2		
2	2A/184	Pneumatics board with components and pipes		2		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer's personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor's accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

*** Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in South Africa.
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LOT – 11, ELECTRICAL MACHINE TRAINERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1.	2A/1	Electrical machine trainer	With flat Demo panel table top rack made using Aluminium profiles with set of panels for measurement loading and essential accessories 1) DC Integrated m/c mounted as Dynamometer & with speed/torque sensors. Must be able to work as shunt/series/compound motor as well as generator. 2) 3 phase AC integrated 300W m/c chassis mounted 3) 1 phase AC Integrated 300W motor 4) 1 phase AC Synchronous m/c. Capacity:300W Motor 5) Universal Motor AC/DC Integrated, 300W, Chassis mounted 6) Repulsion motor chassis mounted 7) Squirrel cage 3 phase AC 300W, 2 speed chassis mounted motor 8) 3 phase salient pole alternators	2 sets		
2	2A/3	3 Phase AC Motor Fault Simulator	Consisting of Aluminium Profile flat demo panel with 3 phase squirrel cage induction motor 1/2 HP, 4 pole, 1500RPM, 6 terminal (delta 415Vac/star 440Vac) motor with built in thermal cutout, 3 phase sequence Indicator Panel	2		
3	2A/6	Electrical Trainer	Facilitates study of transformer operation, determine its equivalent circuit, use of tertiary winding to suppress harmonics etc.	2		
4	2A/7	3-Phase Induction Motor Speed Control Trainer	learning about operative characteristics of ubiquitous squirrel cage induction motor. 3 phase squirrel cage induction motor, ½ HP 4 pole, 1500RPM, 6 terminal (delta 220Vac/star 440Vac) motor with Hand held Tachometer for speed measurement.	2		
5	2A/8	3-Phase Induction Motor Fault Simulator	learning about fault characteristics of squirrel cage induction motor.	2		
6	2A/12	Distance Protection Relay Trainer		2		
7	2A/13	Feeder Protection		2		

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
		Relay Trainer				
8	2A/18	Double Bus Bar Trainer		2		
9	2A/22	Stepper Motor	With digital controller	2		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

***Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in Majuba, South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

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LOT – 12, ELECTRICAL INDUSTRIAL TRAINERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1.	2A/2	Industrial Control Trainer		2		
2	2A/4	House Wiring / Commercial Wiring Installation Trainer		2		
3	2A/5	Electrical Control Trainer		2		
4	2A/9	Power Transmission Line Trainer	Consisting of (1) Input 3 phase DOL Starter panel (2) FWD-OFF-REV, Switch Panel (4) VAR Compensation panel (dual panel) (5) Transmission line Panel - Table Top Panel (6) RLC load panel - Table Top Panel (7) 3 phase dimmer panel – Table top panel	2		
5	2A/10	Electrical Power Generation set up	Consisting of 1) Input 3 phase DOL starter panel 2) FWD/REV, Star-Delta starter panel 3) Instrumentation Power supply cum Multichannel DPM panel 4) SCR Actuator (variable DC) cum sensor signal conditioning panel 5) Rotor Resistance cum 3 phase Synchronous Motor Control Panel 6) DC voltmeter and DC ammeter panel 7) Integrated AC 3 phase measurement panel 9) Resistor Load Panel 10) LC Load Panel	2		
6	2A/11	Biased Differential Relay Trainer		2		
7	2A/14	Over / Under Voltage Relay		2		
8	2A/15	Inverse definite minimum		2		

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
		time (IDMT) Over Current Relay Trainer				
9	2A/16	Over / Under Frequency Relay Trainer		2		
10	2A/17	Power Factor Control Relay Trainer		2		
11	2A/19	Solar Technology Trainer		2		
12	2A/20	Electro hydraulic Trainer		2		
13	2A/21	Electro pneumatic Trainer		2		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

***Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in Majuba, South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

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LOT: 13 - ELECTRONIC TRAINERS

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2A/23	Oscilloscope	Dual Trace, 30 MHZ	2		
2	2A/24	Function generator		1		
3	2A/25	Discrete Component trainer		1		
4	2A/26	Linear I.C. Trainer		1		
5	2A/27	Digital I.C. Trainer		1		
6	2A/123	Micro Processor Training kit	CPU operating @ 2,5/ 5 hz	3		
7	2A/124	Digital Counter with all accessories	Measuring Frequency Range: 0-1000 MHz Measuring Time Range 10s to 1 ns.	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

***Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in Majuba, South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

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The prices quoted should be most competitive

LOT: 14 - ELECTRICAL & ELECTRONIC PANELS & TRAINERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2A/33	E.L.C.B	5KVA (model)	1		
2	2A/34	R.C.C.B	5KVA (model)	1		
3	2A/35	M.C.C.B	5KVA (model)	1		
4	2A/111	Single phase preventer	For 2.2kw	1		
5	2A/112	Earth Leakage Switch	Safe trip	1		
6	2A/80	Contactor	3 phase, 440 volt, 16 amps 2 NO & 2 NC auxiliary contactor	1		
7	2A/81	Contactor	3 phase, 440 volt, 32 amps 2 NO & 2 NC auxiliary contacts	1		
8	2A/82	Limit Switch - Set	Quick action with 2 NC + 1 NO, 2 NO + 1 NC, Delayed Acton with 2 NC + 1NO, 2 NO + 1 NC	1		
9	2A/83	Rotary switch set	16A 500v 3 pole & 16A 500v 4 pole, Qty One each	1		
10	2A/84	Knife switch	DPDT fitted with fuse terminals 16 amp	1		
11	2A/85	Knife switch	TPDT fitted with fuse terminals 16 amp	1		
12	2A/100	Relays - set	Cut out, Reverse current, Over load, under voltage	1 Set		
13	2A/101	Starters for 3 phase, 400V, 50 cycles, A.C. Motors - set	Direct on line tester, Star delta starter, Auto Transformer type, Rotor resistance starter, soft starter, Forward reverse starter driver. Qty One each	1		
14	2A/87	Inverter, sine wave	1 KVA Input 12 Volt DC, Output 220 volt AC with 12 battery	2		
15	2A/122	DTMF Telephone Trainer		1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

***Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in Majuba, South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

- The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
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The prices quoted should be most competitive

LOT: 15 - ELECTRICAL METERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2A/61	Analog multi Meter	0 to 1000 M Ohms, 2.5 to 500 volt	4		
2	2A/29	Digital Multi meter		8		
3	2A/62	A.C. Voltmeter, MI	0-250-500 V AC	2		
4	2A/63	Milli Voltmeter centre zero	100-0-100 m volt	2		
5	2A/64	D.C Milli ammeter	0 - 500 mA	2		
6	2A/65	D.C. Ammeter MC	0-1 A	2		
7	2A/66	Ammeter MC	0-5 A	2		
8	2A/67	Ammeter MC	0-15-25 A	2		
9	2A/68	A.C. Ammeter MI	0-5A	2		
10	2A/69	A.C. Ammeter MI	0-15-25 A	2		
11	2A/70	K.W. Meter	0-1-3 Kw, 2.5/5A portable	2		
12	2A/71	A.C. Energy Meter	Single phase, 5A, 230V, Induction Type	2		
13	2A/72	Single Phase power factor meter	Digital	2		
14	2A/73	Frequency Meter	Digital	2		
15	2A/98	Flux meter	EMF Tester	2		
16	2A/99	Lux meter	Portable digital type, 0 - 50000 lux range	2		
17	2A/114	Clamp on Ammeter	600A	2		
18	2A/77	Tong tester/ Clamp meter	0-5-10A to measure 0-250-500v,	2		
19	2A/30	Megger set	500 Volts & 1000 Volts, Generator type, Qty One each	2		
20	2A/78	Wheat stone bridge	Complete with galvanometer and battery	2		

21	2A/86	DC power supply	0 – 100 volt, 5 amp	2		
22	2A/88	Servo Voltage Stabilizer	Input 150-230 volt AC, Output 220 Volt AC 1KVA	2		
23	2A/109	Auto transformer	3.5kW. 415V, 3phase	1		
24	2A/117	Earth Resistance Tester	2000 Ohm	2		
25	2A/89	Rheostat set	Tubular type of ranges 0-1 Ohm 5 Amp, 0-10 Ohm 5 Amp, 0 – 25 Ohm 1 Amp, 0 – 300 Ohm 1 Amp, 0 - 1000 Ohm 0.5Amp, Qty One each	3		
26	2A/31	Battery Charger		2		
27	2A/131	Motor Winding Set		1 Set		
28	2A/75	Current transformer	20/5 Amp, 10/1 Amp, Qty one each	2		
29	2A/76	Potential Transformer	1000/500V, 500/200 V	2		
30	2A/126	Mini drill machine for P.C.B's with accessories with power supply	12V operating voltage DC	1		
31	2A/120	Stabilized low voltage power supply	-50V to +50V Regulated Adjustable DC Output with Voltmeter & Ammeter, 3V, 6V, 12V Separate AC Outputs	1		
32	2A/121	High Voltage Probe with meter	Maximum Measuring Voltage: 35kV or 40kV, Digital Type	1		
33	2A/119	Radio Receiver AM & FM with FM Stereo		1		
34	2A/125	Alignment tool kit	For Radio Aligning	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

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3. Any correction made in offer shall be initialed by the Bidder.
4. VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT - 16 ELECTRICAL APPLIANCES

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1.	2A/28	Ceiling Fan	AC 230 V, 1200 mm	1		
2.	2A/90	Electric Hot plate	1500W, 230V	1		
3.	2A/91	Electrical Kettle	1000 watts, 230V	1		
4.	2A/92	Electric Iron box	1200 watts, 230 V with temperature control	1		
5.	2A/93	Immersion heater	1000W,230V	1		
6.	2A/94	Geyser	25 litre – 240 V (Storage type)	1		
7.	2A/95	Induction stove		1		
8.	2A /96	Microwave Oven		1		
9.	2A/97	Electric Cooker	1000W,230V	1		
10.	2A/115	Domestic water pump with starter	1 HP	1		
11.	2A/116	Electric Toaster	250 W Heating Element & Heating adjustment, 230 V	1		
12.	2A/118	Wall Fan	18" sweep dia	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

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The prices quoted should be most competitive

LOT - 17 FURNITURE - ELECTRICAL

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2A/113	Booths for domestic wiring		2		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (B)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

1. The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
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The prices quoted should be most competitive

LOT – 18 TOOLS FOR COMMON FACILITY WORKSHOP

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/1	Set spanners combination 6 – 24mm	6-24mm combination set	3		
2	1/2	Set socket and spanners 10 – 32mm	10-32mm 1/2 socket set	3		
3	1/3	Set Of Allen Keys 18 piece Hex & Torx Star	18 piece Hex & Torx Star	3		
4	1/4	Ball pin hammer 300g	Ball pin hammer 300g	15		
5	1/5	Screw driver set 18 piece	set 18 piece 9 flat and 9 Philips	3		
6	1/6	Screw driver set	double end	8		
7	1/7	Trimming Knife	Retractable blade with steel housing	3		
8	1/8	Scribers 100 – 150mm	100mm long straight to 90° bend	15		
9	1/9	Square 150 mm	150mm long	15		
10	1/10	Tin snips	3 Piece Set with straight, curve(left and Right)	2		
11	1/11	Divider 150mm	150mm long	15		
12	1/12	Inside and Outside callipers	150mm long	3		
13	1/13	Jenny callipers	150mm long	3		
14	1/14	Steel Ruler 150mm	steel 150mm long	15		
15	1/15	Set pin punches – parallel (2.5mm – 8mm)	2.5mm-8mm set pin punch 100mm long	3		
16	1/16	Cir-clip Pliers internal 200mm	200mm long	3		
17	1/17	Cir-clip Pliers external 200mm	200mm long	3		
18	1/18	Pliers combination insulated 200mm	200mm long	3		
19	1/19	File Brush	230mm long	15		
20	1/20	De-Burring Tool	150mm long with 5 different blades	15		
21	1/21	Square 100 mm	100mm long engineering square	15		
22	1/22	Scriber	200mm long with straight to 90. bent	15		
23	1/23	Prick punch	5 Piece HSS 50-150mm	15		
24	1/24	Chisel	16mm flat x 150mm long	15		
25	1/25	Paint Brush	25mm	15		
26	1/33	M6 Tap set	M6 set with 1st,2nd and 3rd cut and taper point	15		

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
27	1/34	M8Tap set	M8 set with 1st,2nd and 3rd cut and taper point	15		
28	1/35	M10 Tap set	M10 set with 1st,2nd and 3rd cut and taper point	15		
29	1/36	Chuck Spanner	100mm long	15		
30	1/37	Shaving Hook	300mm Long round	15		
31	1/42	Running Centre		8		
32	1/43	Thread Set gauge	60' and 55' Inch&Metric	8		
33	1/44	Thread pitch gauge	55' & 60° Inch&Metric	8		
34	1/45	Allen key 8mm	8mm straight end	8		
35	1/47	Tool holders min off 3 Boring bar	10mm, 16mm and 20mm	15		
36	1/49	Scriber	200mm long straight to 90' bend	8		
37	1/50	Drift	drift 2-5 shank	8		
38	1/51	Drill 32mm	32mm with no2 shank	15		
39	1/52	Drill 28mm	28mm with no2 shank	15		
40	1/53	Drill 25mm	25mm with no2 shank	15		
41	1/54	Drill 16mm	16mm with no2 shank	15		
42	1/55	Copper Hammer	25MM long flat sides	15		
43	1/56	Knife cutting tool	1.5mm radius	15		
44	1/57	Smooth/finishing cutting tool	0.5mm radius	15		
45	1/59	Knurling tool	Diagonal 2-5mm three sided	15		
46	1/63	Torque wrench 65 – 335Nm	65-335Nm torque wrench	3		
47	1/64	C-spanner set	C-spanner set C1-6	3		
48	1/65	Bearing puller set 75mm	bearing puller 3 legs hydraulic manual	3		
49	1/66	Rubber mallet	flat ended	8		
50	1/67	Wheel dresser		3		
51	1/131	Illuminated magnifiers		5		
52	1/132	Sine bar	200 mm	5		
53	1/133	Precession level, flat type	Sensitivity 0.02/200 mm	5		
54	1/134	Moarse Taper gauge - Set of Plug and ring type	MT1, MT2, MT3, MT4	5		
55	1/135	Magnetic V- block	Assorted	5		
56	1/136	Bevel Protractor	300mm	5		
57	1/137	Parallel blocks- hardened	Set of assorted sizes	5		
58	1/138	Engineer Try Square	Assorted sizes	5		
59	1/139	Bevelled Edge	Blade length-100mm	2		

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
60	1/140	Straight edge	Blade length-1000mm	2		
61	1/141	Steel Rulers	300/600 mm	16		
62	1/144	Letter punch	Set of 3mm& 6mm	5		
63	1/145	Number punch	Set of 3mm& 6mm	5		
64	1/146	Tap wrenches	Assorted sizes	5		
65	1/147	Flat scrapers	20mm width	5		
66	1/148	Triangular scrapers	200mm long	5		
67	1/149	Hand vice	150mm jaw	8		
68	1/150	Centre punch	100 mm	15		
69	1/151	Set of Hammers	Nylon/Ballpein/cross pein	15		
70	1/152	Hack Saw Frame Tubular	Tubular, with 20 blades	15		
71	1/153	Electric Drill Gun	13mm capacity	5		
72	1/154	Drill chucks	13mm capacity	5		
73	1/155	Oil stones	Medium grit, 150x50x25mm	5		
74	1/164	Chisel	Cold Flat 18x150	15		
75	1/165	Chisel	Cross Cut 10x3x200	15		
76	1/166	Chisel	Half round 10 x 250 mm	15		
77	1/167	Chisel	Diamond point 10 x 200 mm	15		
78	1/168	Set of files	Flat bastard 350mm	30		
			Flat second cut 250 mm			
			Triangular smooth 250 mm			
			Needle file set 150 mm			
79	1/169	File card		15		
80	1/170	Safety goggles		30		
81	1/171	Set of callipers and Dividers	Spring/firm joint/jenny/wing compass	15		
82	1/126	Feeler Guage	0.05-1mm range with se of 20 blades	5		
83	1/128	Plug gauge-set	Inch and Metric Assorted sizes	5		
84	1/48	Surface gauge	6-Inch thick	8		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

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The prices quoted should be most competitive

LOT - 19 DRILL BITS & OTHER TOOLS FOR COMMON FACILITY WORKSHOP

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/26	12mm Drill	12mm with straight shank	15		
2	1/27	10mm Drill	10mm with straight shank	15		
3	1/28	8.5mm Drill	8.5mm with straight shank	15		
4	1/29	8mm Drill	8mm with straight shank	15		
5	1/30	6.8mm Drill	6.8mm with straight shank	15		
6	1/31	6mm Drill	6mm with straight shank	15		
7	1/32	5mm Drill	5mm with straight shank	15		
8	1/58	Parting tool	2.5mm thick blade with holder	15		
9	1/60	Thread cutting tool	v-threads, acme threads and square threads up to 3mm pitch	15		
10	1/61	Set of boring bars	10mm, 16mm and 20mm	15		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

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The prices quoted should be most competitive

LOT - 20 CONSUMABLES FOR COMMON FACILITY WORKSHOP

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/172	Safety lockout/tag out system		30		
2	1/173	Safety boots (Pair)		30		
3	1/174	Safety gloves (Pair)		30		
4	1/175	Personal Protective clothing (Suit)		30		
5	1/176	Safety Goggles/Face shield		30		
6	1/177	Hairnet		30		
7	1/178	Ear protection		30		
8	1/179	Marking blue	350ml marking blue spray	10		
9	1/180	Tapping paste	500g tub	10		
10	1/181	Shim stock (0.01-1mm)	0.05, 0.1,.0.2,0.25, 0.3, 0.4, 0.45, 0.5, 0.55, 0.6, 0.7, 0.75, 0.8, 0.9, 1mm set of shims	3		
11	1/182	Drill bits (4mm – 10mm)	4, 4.8, 5, 5.5, 5.8, 6, 6.5, 6.8, 7, 7.5, 7.8, 8, 8.5, 8.7, 9, 9.5, 10mm straight shank drill	8		
12	1/183	Set of taps (M6,M8 , M10)	M6 set 1st, 2nd and 3rd cut with taper point, M8 set 1st, 2nd and 3rd cut with taper point, , M10 set 1st, 2nd and 3rd cut with taper point,	5		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

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We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

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The prices quoted should be most competitive

LOT - 21 TOOLS FOR MILLWRIGHT

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2A/133	Set spanners combination 6 – 24mm	6-24mm combination set round to open mouth	3		
2	2A/134	Set socket and spanners 10 – 32mm	10-32mm 1/2'	3		
3	2A/135	Set Of Allen Keys	metric and imperial 100mm long	3		
4	2A/136	Ball pin hammer 200g	200g flat and round head	4		
5	2A/137	Ball pin hammer 500g	500g flat and round head	4		
6	2A/138	Prick punch	100mm long	8		
7	2A/139	Cold chisel 20mm X 200mm	20mm with X 200mm long	8		
8	2A/140	Screw driver set 18 piece	9 flat and 9 Philips with insulated handles	8		
9	2A/141	Square 150 mm	150mm	8		
10	2A/142	V-blocks	1-5/8" x 1-1/4" x 1-1/4"	8		
11	2A/143	Tin snips	Combination set	8		
12	2A/147	File Bastard 300mm with handle	300mm long flat with handle	8		
13	2A/148	File second cut 300mm with handle	300mm long flat with handle	8		
14	2A/149	File Smooth 300mm with handle	300mm long flat with handle	8		
15	2A/150	File Round 300mm with handle	300mm long round with handle	8		
16	2A/144	File Half round 300 mm with handle	300mm long half round with handle	8		
17	2A/145	File Three-square 300 mm with handle	300mm long Three-square with handle	8		
18	2A/146	File Square 300 mm with handle	300mm long square with handle	8		
19	2A/151	File Flat 150 mm with	150mm long flat with handle	8		

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
		handle				
20	2A/152	Tap handle 150 mm	150 mm long 4-13mm tap size	8		
21	2A/154	Hack saw	300 mm long	8		
22	2A/155	Magnifying glass	90mm Diameter Lens	2		
23	2A/156	Hand grinding machine	115mm 4 – 1/2 inch 1010W 115mm disk	2		
24	2A/157	Hand baby grinder	670w 115mm disk	2		
25	2A/158	File Brush	230mm long	5		
26	2A/159	Paint Brush 25mm	25mm wide	5		
27	2A/160	Steel Ruler 300mm	300mm long accuracy 0.5mm	8		
28	2A/161	Radius Gauges	15mm-25mm radius gauge	2		
29	2A/181	Protractor (Engineer)	180° steel	8		
30	2A/162	Torque wrench	65-335Nm torque wrench	2		
31	2A/163	C-spanner	C-spanner set C1-6	2		
32	2A/41	Bearing puller	3 leg 12" dia	2		
33	2A/164	Copper hammer	25MM flat end	8		
34	2A/165	Number stamps 4mm	4mm thick	2		
35	2A/166	Letter stamps 4mm	4mm thick	2		
36	2A/167	Wheel dresser		1		
37	2A/178	Belt tension gauge	Belt tension gauge kgf and mm	3		
38	2A/180	Straight edge	1meter x 3 mm thick	8		
39	2A/182	Marking off table or surface plate with angle plate		1		
40	2A/194	Marking Pens		16		
41	2A/195	Marking blue	350ml marking blue spary	10		
42	2A/196	Tapping paste	500g tub	10		
43	2A/177	Combination Square set		3		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

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We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

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The prices quoted should be most competitive

LOT - 22 TOOLS FOR BOILER MAKER

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	ITEM	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	3/1	Ruler 1 m	1 m	15		
2	3/2	Mason square	1m	15		
3	3/3	Square 300 × 200 mm		15		
4	3/4	Combination square 300 mm	300mm	15		
5	3/5	Trim knife	Retractable Trimming Knife + 3 Blades	15		
6	3/6	G Clamp 100 mm		15		
7	3/7	Centre punch	5 x 120mm Centre Punch	15		
8	3/8	Bevel square		15		
9	3/9	Folding ruler 600 mm / Line of Chords		15		
10	3/10	Scriber	170mm	15		
11	3/12	Spring divider 150 mm – 350 mm	150mm	15		
12	3/13	Hammer		15		
13	3/14	Trammel points		15		
14	3/15	Chalk		15		
15	3/16	Pipe centre finder		15		
16	3/17	Fuller		15		
17	3/18	Chalk Line		15		
18	3/19	Chalk Divider		15		
19	3/20	Tin Snips	9 Piece Set	15		
20	3/24	Compass	Compass set	15		
21	3/25	Measuring tape 5 m		15		
22	3/26	Protractor 360	Helix Protractor 360 Degrees - 15cm	15		
23	3/27	Flexi curve	(60cm) Flexible Curve	15		
24	3/44	Marking off table		1		
25	3/46	Chain block 2 ton	2 ton	2		
26	3/47	Coffin block 2 ton	2 ton	2		
27	3/48	Shackles 2 ton	2 ton	2		
28	3/49	Chain slings 2.5 ton	2.5 ton	2		
29	3/50	Wire ropes (20mm diameter)		2		
30	3/51	Tirfors 2 ton	2 ton	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render

supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

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We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

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The prices quoted should be most competitive

LOT: 23 – SET OF TOOL HOLDERS FOR CNC MACHINES

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/161	Set of Tool Holders for CNC Machines	Assorted	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

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Dated:.....

Signature and seal of Authorized Signatory

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LOT: 24 – MECHANICAL PRESS 10 TONS CAPACITY

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/95	Mechanical Press	10T	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

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LOT: 25 – MILLWRIGHT LAB EQUIPMENT

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2A/185	Key fitting apparatus		2		
2	2A/186	V-belt apparatus with double v-belts		2		
3	2A/187	Chain drive apparatus with chain tensioner		2		
4	2A/189	Thruster brake with drum		2		
5	2A/190	Spherical bearing with shaft		2		
6	2A/188	Dial test apparatus with dial gauges (0.01mm increments)		2		
7	2A/191	Ball bearing with shaft		2		
8	2A/192	Bearing heater		2		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

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LOT: 26 – REFRIGERATION & AIR CONDITIONING TRAINER EQUIPMENT

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2B/1	VRF VRV unit two indoor Units		1		
2	2B/2	Walk-in Cooler, Trainer	3000K cal/hr	1		
3	2B/3	Vapour Absorption Refrigeration Trainer		1		
4	2B/5	Heat Exchanger Shell & tube type		1		
5	2B/6	Heat Exchanger tube in tube type		1		
6	2B/7	Refrigeration tutor		1		
7	2B/8	Package Air conditioner		1		
8	2B/9	Automobile Air Conditioner Trainer		1		
9	2B/10	Split type Air conditioner trainer		1		
10	2B/11	Deep Freezer Trainer		1		
11	2B/12	Display Cabinet Trainer		1		
12	2B/105	Evacuating & Refrigerant charging station comprising a) Rotary two stage vacuum pump and motor (With gas ballast & anti such back) Manifold with gauges valves and capable of pulling vacuum upto 50 microns of Hg and with provision of connecting to a mic b) Graduated charging cylinder with provisions for temperature correction and all necessary isolating valves.		1		
13	2B/116	Visi Cooler Trainer		1		
14	2B/118	Ice Candy unit complete with stainless steel tank mould box thermocole insulated sun mica body agitator compressor		1		

		motor etc. Temperature pressure refrigerant control gauges motor pipe fitting etc. 3000 K.Cal/hr or working model simulator.				
15	2B/119	Air conditioning plant direct and indirect water chiller complete with all controls etc. Capacity 15000 K. cal/hr or working trainer model/simulator, Alternatively a packaged Air conditioner of similar		1		
16	2B/120	Condensing unit with open type compressor air cooled evaporator condenser controls etc.	Capacity 3000 K. cal/hr	1		
17	2B/4	Cut Section model: Open , Semi sealed and sealed compressor	(set of 3)	1		
18	2B/107	Two stage rotary vacuum pump of capacity approx 60-100 1pm capable of evacuating to 50 microns of Hg and fitted with gas ballast anti suck valve and single phase motor.		1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer’s personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor’s accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

***Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in Majuba, South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

SI No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

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LOT –27 - REFRIGERATION & AIR CONDITIONING EQUIPMENT

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. No	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2B/127	134A Refrigerant in cylinders		2		
2	2B/158	Accessories thormostatic expansion valve distributors, driers, (pencil solid core type etc.) accumulators, receivers, bellows type thermostat, HP Stat & LP Stat humidity stat, solenoid valves		1		
3	2B/147	Acid test kit		1		
4	2B/109	Air Compressor two stage for oil less dry air with rust proof tank assemble heater and control		1		
5	2B/108	Anemometer	Vane type	1		
6	2B/152	Ball Valves service valves hand shut valves	1/4" to 7/8"	2		
7	2B/15	Bending spring	External type for copper tube 3 to 6 mm. Dia	4		
8	2B/115	Window Air Conditioning	Capacity 3000K Cal/hr	1		
9	2B/24	Box spanner	6.4 to 10 mm	2		
10	2B/150	Brazing alloy rods for 1/4" to 7/8" tubes Cu to cu, Cu to steel, Cu to brass and appropriate fluxes		1		
11	2B/19	Capillary plug gauge		4		
12	2B/142	Circulating water pump (small)		1		
13	2B/138	Components of Car AC systems. a) Wobble plate compressor with mounting brackets. b) Serpentine evaporator. c) Parallel flow condenser. d) Hoses, tubes,		1		

		receive, expansion valve. e) Electrical components & wiring harness				
14	2B/31	Compound gauge diameter 63 mm with recalibration set screw scale vacuum 76 mm pressure 15 Kg/Sq.cm		4		
15	2B/154	Compressor tester for small hermetic compressor		1		
16	2B/111	Descaling pump set with stainless steel impeller and housing complete with motor 1 HP and accessories.		1		
17	2B/106	Dial thermometer remote controls armoured capillary dial 75 mm-50		2		
18	2B/132	Dry N2 in cylinder with 2 stage regulator or commercial N2 in cylinder with drier unit and 2 stage regulator		1		
19	2B/159	Electrical accessories current & potential relays start & run capacitors, PTC,s overload protector relays contractor.		1		
20	2B/156	Evaporator of direct cooled refrigerator with capillary heat exchanger		1		
21	2B/157	Evaporator of Frost free refrigerator		1		
22	2B/140	Fan coil unit with water valves	(2 & 3 way)	1		
23	2B/136	Filter driers for HFC-134 A for repairs retrofits		4		
24	2B/125	Fin straightener / Fin comb		42		
25	2B/13	Flaring tool set with Swedging	Single for tube 4.7 to 16 mm OD	4		
26	2B/135	Four way manifold with gauges		1		
27	2B/34	Gas leak detector for halogen gas	Gas leak detector using halogen gas	1		
28	2B/126	HC refrigerant in cylinder/ disposable containers		2		
29	2B/113	Heating Kit with infra red bulb	150 watt capacity	1		

30	2B/155	Hermetic compressor	1.5 Ton	1		
31	2B/151	Rotary Compressor		2		
32	2B/38	L-Allen Key set size	1.5 to 6.4mm	4		
33	2B/35	Lapping plate	250x200mm	2		
34	2B/123	Micron vacuum gauge	Capable of reading upto 20 microns	2		
35	2B/21	Piercing plier 6-18 mm & Piercing valves both with access fittings		2		
36	2B/20	Pinch off plier / crimping plier tool	16 to 18 mm dia	2		
37	2B/17	Pinch off tool	For copper tube 6 to 18 mm dia	4		
38	2B/68	Pipe bending tool lever type with degree indicator for tube OD 6.4 to 16 mm		1		
39	2B/16	Pipe cutter	Miniature for copper tube 6 to 18 mm dia	4		
40	2B/145	Pipe threading dies & pipe vice		1		
41	2B/149	Pop rivet gun		1		
42	2B/131	Portable Air-LPG brazing kit with 2 Kg LPG cylinder, torches, hoses, standard make. a) With straight flame. b) With Cyclone / swirl jet flame.		1		
43	2B/112	Pressure testing tank with lighting arrangement pressure gauge (0-35 Kg / sq.cm) double stage		1		
44	2B/30	Pressure gauge diameter 63 mm with recalibration set screw scale vacuum 76 mm pressure		4		
45	2B/36	Punch hole for cutting gasket	4.7 to 16 mm dia	4		
46	2B/153	Quick couplers process tube adaptor	1/4" to 7/8"	2		
47	2B/18	Ratchet spanner	6.4 mm sg reversible	4		
48	2B/121	Reciprocating compressor with provision of capacity control etc, for demonstration	Capacity 9000 K. cal/hr semi hermetic / open type.	1		
49	2B/128	Recovery unit for R134 A refrigerants with recovering		1		

		cylinders.				
50	2B/160	Recycling Unit		1		
51	2B/148	Refractometer		1		
52	2B/104	Refrigerant cylinder	Capacity 2.5 Kg	2		
53	2B/114	Refrigerator rotary compressor type	165 litre	1		
54	2B/129	Reverse cycle AC/Heat pump	3000 K.cal/hr. Or 4500 K.cal/hr.	1		
55	2B/23	Ring spanner set	4.7 mm to 16 mm	5		
56	2B/143	Safety gloves, eye protection glasses		4		
57	2B/144	Safety shoes		20		
58	2B/146	Schraeder valve core removal tool		1		
59	2B/37	Scissor gasket cutting stainless steel	length 25 mm	4		
60	2B/124	Sensor thermometer	Digital	2		
61	2B/32	Serviceman thermometer in metal case	-30 to + 30 Deg.C.	2		
62	2B/139	Shell and tube Condenser	Small capacity	1		
63	2B/141	Shell and tube DX chillers (Small)		1		
64	2B/33	Sling psychrometer mounted on aluminum / plastic back scale –50 Deg. C to + 50 Deg.C		1		
65	2B/22	Spanner double ended	4.7 mm to 16 mm	5		
66	2B/130	Split type AC	With indoor unit & outdoor units and electronic remote control	1		
67	2B/69	Blow Lamp	Capacity ½ litre	2		
68	2B/14	Swedging tool	Punch type set of size, for tube 4.7 to 16 mm OD	4		
69	2B/39	T-Allen key set size	5/32”L & 1/8”	4		
70	2B/133	Trichlorethylene bottle		1		
71	2B/134	Two way manifold with gauges		1		
72	2B/28	Valve key-T-Handle	4.7 & 6.4 mm Sq	4		
73	2B/117	Water Cooler	Storage type	1		
74	2B/110	Scraper triangular blade removable		2		
75	2B/137	Sealed ex-proof components for use in HC appliances: Thermostats Sealed OLPS solid state PTC’s door switches lamp holders		4		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

1. The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
2. No erasures or alternations in the text of the offer are permitted.
3. Any correction made in offer shall be initialed by the Bidder.
4. VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT –28 – MEASURING TOOLS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/125 2A/173	Depth Micrometer	0 - 100 mm	12		
2	1/121	Dial Gauge- lever type	Graduation 0.01mm	8		
3	1/122	Dial Gauge- lever type	Graduation 0.002mm	8		
4	1/46 1/123 2A/179	Dial gauge with magnetic base	Test Indicator Gauge accuracy 0.01mm. Magnetic Base Stand non fine adjusting	28		
5	1/120	Dial Indicator	Range: 10mm	8		
6	1/124	Flexi. Magnetic dial gauge stand		5		
7	1/117	Inside Micrometer - caliper type	5-30mm	8		
8	1/68 2A/172	Micrometer set bigger than 100mm Size: 100 to 125mm	Graduation 0.01mm	5		
9	1/69	Micrometer set bigger than 100mm Size: 125 to 150 mm	Graduation 0.01mm	3		
10	1/70	Micrometer set bigger than 100mm Size: 150 to 175 mm	Graduation 0.01mm	3		
11	1/108 2A/168 2B/81	Micrometer Outside	0-25mm	25		
12	1/109 2A/169	Micrometer Outside	25-50mm	23		
13	1/110 2A/170	Micrometer Outside	50-75mm	23		
14	1/111 2A/171	Micrometer Outside	75-100mm	23		
15	1/112	Micrometer Outside	100-125mm	15		
16	1/113	Micrometer Outside	125-150mm	15		
17	1/114	Micrometer Outside	150-175mm	15		
18	1/118	Micrometer Outside Digital	0-25mm	8		
19	1/119	Micrometer Outside Digital	25 - 50mm	8		
20	1/129	Radius gauge- set		5		
21	1/38	Telescopic gauge 12.7-19		15		
22	1/39	Telescopic gauge 19-32		15		
23	1/40	Telescopic gauge 32-54		15		
24	1/41	Telescopic gauge 54-90		15		
25	1/105 2A/174	Vernier caliper	150mm, Graduation: 0.02mm	23		
26	2A/175	Vernier caliper	200mm, Graduation: 0.02mm	8		
27	2B/80	Vernier calipers	Length 250mm	1		

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. No	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
28	1/106	Vernier calipers	300mm, Graduation: 0.02mm	15		
29	1/107	Vernier calipers Digital	200mm	15		
30	1/115 2A/176	Vernier depth gauge	300mm	8		
31	1/116	Vernier Height Gauge	0-600mm	5		
32	2B/82	Vernier Height Gauge	250mm	1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

1. The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
2. No erasures or alternations in the text of the offer are permitted.
3. Any correction made in offer shall be initialed by the Bidder.
4. VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT – 29 BANDSAW

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.						
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/91	Horizontal Bandsaw		1		
2	1/92	Vertical Bandsaw		1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer's personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor's accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

*Total should include the cost towards the following:

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in Majuba, South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

- The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
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- Any correction made in offer shall be initialed by the Bidder.
- VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT – 30 MECHATRONICS AND ROBOTICS EQUIPMENT

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2A/216	PLC trainer kit	PLC Trainer Kit including Static & Dynamic Modules	1		
2	2A/217	Digital Sensor Module		1		
3	2A/218	Analogue Sensor Module		1		
4	2A/219	Dynamic Module	With Sensor Module and Relay Module	1		
5	2A/220	Linear Transfer System	Complete workstation mounted on a aluminum profile plate with operating console, consisting of: Belt conveyor, Linear pick & place unit, Horizontal transfer unit, Transfer Module (Rotary Pick & Place Unit), 6 Station Rotary Carousal Table, Drilling module.	1		
6	2A/221	Six Axis Robot	Articulated ROBOT - PC Controlled 6 Axis with pedestal base, 2.5 Kgs Payload capacity, Pneumatic Gripper, Robot Controller, Robot Controlling software.	1		
7	2A/222	Robot Application Experimental Kit	With experiment table, Pneumatic chuck, Pneumatic vice, Pick & Place- Vertical stacking & Horizontal Palletizing, assembly & dismantling, Gluing experiment kit, Testing bank of push button switches, Painting kit	1		
8	2A/223	Integration of robot with automation	4 Axis Assembly Robotic ARM with Pallet & Robot Controller Software, Weighing & Palletizing System With integration of Robot with Complete Workstation Mounted on	1		

			a Aluminium Profile Plate, Belt Conveyor, Rotary Pick & Place Manipulator, Weighing Module and PLC			
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
The above Cost shall include E&C and initial training of customer's personnel in operation and maintenance for above equipment at project site in South Africa. (HMT(I) shall arrange to provide, free furnished bachelor's accommodation, local transport and necessary assistance in getting VISA for the Technical Personnel deputed to site in South Africa. To & fro Airfare, Boarding expenses, Travel Insurance and incidental expenses to be borne by the supplier).						
* Total cost of equipment including E & C in Indian Rupees (in words):						

***Total should include the cost towards the following:**

- Deputation of technical personnel for carrying out installation, commissioning, trials, training the customer's personnel in operation and maintenance of above equipment at project site in Majuba, South Africa.
- Necessary tools, fixtures, instruments, trial materials, consumables, etc, for Installation and training have to be sent along with the supplies.

Please indicate the man days considered for deputation on the format given below

Sl No.	No. of Persons required for E&C of this equipment	Total No. of Man days required

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

- The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
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- Any correction made in offer shall be initialed by the Bidder.
- VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT – 31 INDUSTRY 4.0 SETUP IN MANUFACTURING MODULE (PORTABLE)

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	2A/224	Industry 4.0 setup in manufacturing module(Portable)		1		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

1. The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
2. No erasures or alternations in the text of the offer are permitted.
3. Any correction made in offer shall be initialed by the Bidder.
4. VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT – 32 PILLAR DRILLING MACHINE

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/83	Pillar Drilling Machine	Cap. 25 mm	2		
2	2A/37 & 4A/24	Pillar Drilling Machine	Cap. 20 mm	3		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

- The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
- No erasures or alternations in the text of the offer are permitted.
- Any correction made in offer shall be initialed by the Bidder.
- VALUES should be both in figures and Words.

The prices quoted should be most competitive

LOT – 33 WORK BENCHES

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.						
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty	Unit F.O.R. Nhava Sheva Port Price in Ind. Rs	Total F.O.R. Nhava Sheva Port Price in Ind. Rs.
1	1/ 158	Work Benches	Twin Station with vice	4		
2	1/ 157, 2A/ 193, 2B/ 122, 3/ 45 & 4A/ 37	Work Benches	Four Station with vice	31		
A	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees with seaworthy packing					
B	0.1% GST applicable on (A)					
C	Total F.O.R Nhava Sheva Mumbai Port Price in Indian Rupees i.e. (C) = (A) + (B)					
Total cost of equipment in Indian Rupees (in words):						

It is hereby certified that we have understood the instruction to Bidders and also the Terms & Conditions of Contract attached to the tender and have thoroughly examined and are aware of the nature of supplies/services required and our offer is to render supplies/services strictly in accordance with the requirements and according to the terms of the tender. We agree to abide solely by the terms & conditions of contract and other conditions of the tender in accordance with the tender documents if the contract is awarded to us.

We hereby offer to render supplies/ services as detailed above or such portion thereof as you may specify in the acceptance of tender at the price quoted and agree to hold this offer open for acceptance for a period of 90 days from the date of opening of tender. We shall be bound by the communication of acceptance dispatched within the prescribed time.

We possess the necessary License from the Government of India/State Government for rendering the supplies / services.

Dated:.....

Signature and seal of Authorized Signatory

NOTE

1. The offer must be submitted as per above proforma. The Bidder may use his letterhead to submit his offer.
2. No erasures or alternations in the text of the offer are permitted.
3. Any correction made in offer shall be initialed by the Bidder.
4. VALUES should be both in figures and Words.

The prices quoted should be most competitive

End of Section V

the particulars of deviations from the requirements of the Instructions to Bidders and Terms & Conditions of
closed for each lot separately): -

[illegible]

Signature and seal of
the Authorized Signatory

NOTE: Where there is no deviation, the statement should be returned duly signed with an endorsement indicating "No Deviations".

(i) Is the firm registered with Govt. Authority/ Agency or MNC? If so, a copy of the registration certificate should be enclosed.

(ii) Name and address of the Banker

[illegible]

NOTE: A certificate from the customer should preferably be enclosed to indicate that the contract was satisfactorily performed.
To be enclosed for each lot separately.

PROFORMA FOR PERFORMANCE BANK GUARANTEE

THE ASSISTANT GENERAL MANAGER
HMT (INTERNATIONAL) LTD.
HMT BHAVAN
59 BELLARY ROAD
BANGALORE – 560 032

DEAR SIR,

THIS DEED OF GUARANTEE EXECUTED BY BANK, (NAME AND ADDRESS OF THE BANK) (HEREINAFTER REFERRED TO AS BANK) IN FAVOUR OF HMT (INTERNATIONAL) LTD. (HEREINAFTER REFERRED TO BENEFICIARY) NOT EXCEEDING RS..... (RUPEES ONLY) AT THE REQUEST OF M/S. (HEREINAFTER REFERRED TO AS SUPPLIER).

WHEREAS THE SUPPLIER HAS APPROACHED BANK TO ISSUE BANK GUARANTEE IN YOUR FAVOUR FOR A SUM OF RS. (RUPEES ONLY). WHEREAS THE SUPPLIER HAS RECEIVED PURCHASE ORDER NO. DATED FOR RS FOR PROVIDING SERVICES AS STATED IN THE PURCHASE ORDER. WHEREAS THE SUPPLIER HAS TO SUBMIT PERFORMANCE GUARANTEE FOR FIVE PERCENT OF THE VALUE OF SUPPLIES PORTION OF RS.....AS STATED IN THE SAID PURCHASE ORDER.

WE HEREBY CONFIRM AND STATE THAT WE AS GUARANTORS SHALL BE RESPONSIBLE TO YOU ON BEHALF OF THE “SUPPLIER” FOR A TOTAL SUM OF RS..... (RUPEES ONLY) IN CASE OF VIOLATION OF ANY OF THE TERMS/CONDITIONS OF THE SAID PURCHASE ORDER.

WE UNDERTAKE TO PAY YOU UPON FIRST WRITTEN DEMAND DECLARING THE “SUPPLIER” TO BE IN VIOLATION/BREACH OR CONTRAVENTION OF ANY OF THE TERMS AND CONDITIONS, WITHOUT DEMUR OR ARGUMENT OR COURT ORDER OR RESOLUTION WITHIN THE VALIDITY OF THIS GUARANTEE, A SUM OF RS..... (RUPEES ONLY) AS AFOREMENTIONED WITHOUT YOUR HAVING TO PROVE TO US OR TO SHOW GROUNDS OR REASONS FOR YOUR DEMAND FOR THE SUM SPECIFIED HEREIN.

THE GUARANTEE CONTAINED HEREIN SHALL NOT BE AFFECTED BY ANY CHANGES IN THE CONSTITUTION OF THE BANK OR IN THE CONSTITUTION OF THE BENEFICIARY VIZ. YOURSELF AND SHALL BE VALID TILL (DATE) FROM THE DATE OF ISSUE PROVIDED HOWEVER THAT IN CASE DEMAND IS NOT MADE BY YOU UNDER THIS GUARANTEE ON OR BEFORE (DATE) , BANK SHALL BE FULLY ABSOLVED FROM ANY LIABILITY UNDER THIS GUARANTEE DEED.

WE HEREBY DECLARE AND STATE THAT THIS GUARANTEE UNLESS INVOKED BY YOU AS AFORESAID SHALL BE VALID TILL (DATE) FROM THE DATE OF ISSUE AND SHALL BE NULL AND VOID THEREAFTER WHETHER THE ORIGINAL GUARANTEE IS RETURNED OR NOT

			Annexure - 5
PROFORMA FOR VENDOR REGISTRATION			
S.N.	Description	Details	
	(a) Name and address of the vendor		
	(b) Please specify whether you are : Manufacturing Unit / Distributor / Agent etc.,		
1	(c) Telephone No.		
	(d) Fax No.		
	(e) Email ID		
	(f) Company Profile (Please enclose)		
	(g) Turnover of the Company for the past three years		
	(h) Bankers Details		
2	Quality system implemented - ISO 9000 / QS 2000 etc.		
3	Name, address & Telephone No. of the owner / proprietor/partners		
4	Sales Tax Registration No. - Central & State		
6	Registration No.		
7	Details of Products Manufactured / Distributed / offered. Please enclose brochure.		
8	Details of Manufacturing Units / Workshops etc., available		
9	Details of Machines, equipment, computers available		
10	Manpower / Organization structure		
11	List of Major Products / Services		
12	Details of your major customers		
13	Are you exporting Products / services? If so, please furnish details of exports for past 3 years.		
14	Are you providing training to overseas students/trainers and if so, give details of the training courses conducted for last 3 years		
15	Do you have branches or institutes under your group, If yes, give details with address.		
16	Whether you are affiliated / accredited to any Govt. Agency / Reputed organization		
Declaration: I / We declare that the details given above are true and correct.			
Place :		Signature of Authorized person	
Date :		With Company Seal	

(Note: Please attach detailed information in a separate sheet wherever required)

QUALITY AND PACKING DETAILS

1. MACHINE / EQUIPMENT:

- 1.1 Machine / Equipment shall be manufactured and delivered in accordance with the specifications as given in this Tender and quality shall be as per Indian / International Standards.
- 1.2 Goods supplied shall be new, genuine, unused and shall be of current models and of current productions.
- 1.3 Any alteration to the specifications, Design, Patterns etc. of the offered goods shall only be made upon the Buyer's consent in writing.
- 1.4 The Tenderer warrants that the materials, metals, chemicals, paints, packing pieces etc. used in the manufacture of goods and all its packing and packaging are fully trivialized and stable under tropical conditions. Any damages arising from the inadequate trivialization, shall be deemed an inherent defects of manufacture.
- 1.5 **BOUGHT-OUTS:**
All the bought-out items such as bearings, belts, electricals, motors, contactors, switches, MCBs, fuses, transformers, rubber gaskets, O-rings, conduit pipes, coolant and hydraulic hoses etc. **shall correspond to ISI / International specifications, should preferably have CE mark** and shall be of reputed make like SKF, FENNER, BHARAT, BIJILEE, CUTTLER HAMMER, CROMPTON GREAVES, SIEMENS and TELEMACHNIC.
- 1.6 Bought-out accessories like Furnace Lamps, pumps, Panel Air conditioners, Oil Coolers, Panel Boards, Stabilizers, Transformers etc. should be from reputed original equipment manufacturers.
- 1.7 Machine / Equipment aesthetics especially sheet metals, guards, doors, covering plates, castings are to be made to international standards. Painting and finish of Furnaces are the most important aspects of aesthetics.

2. INSTRUCTION & SPARE PARTS MANUALS:

- 2.1 Neatly printed manuals should be sent with the Machine / Equipment. Instruction Manuals should be of updated version containing complete details of offered Machine / Equipment including customer name, Machine / Equipment number, Machine / Equipment model, year of manufacture etc..
- 2.2 Drawings should be clear and legible. Xerox copies are not acceptable. Details of bought-out items used in the Machine/Equipment should be included in the manual. Good quality paper should be used for printing of manuals.
- 2.3 All foundation drawings showing electrical, air, water and other service connections of Machine / equipment, with floor plans to be provided in two sets, in English.

3. SAFETY DEVICES:

Each Machines/equipment should be provided with adequate and all necessary safety devices for the protection of the operator/s, factory personnel and the environment.

4. OTHER CONDITIONS:

Since Machine / Equipment are being exported, Machine / Equipment including all accessories have to be built to ensure high quality performance, aesthetic appearance in respect of general finish, painting, sheet metal fabrication and international safety regulations.

5. PACKING INSTRUCTIONS:

- 5.1 Export worthy wooden / plywood packing as per Indian / International standards suitable for sea freight.
- 5.2 Equipment, accessories and spares are to be covered by thick silpaulin sheet or 1 mm thick polythene sheets and all openings are to be sealed .
- 5.3 All external bright / machined surfaces should be protected with coating of OKS-CORTEC VCI 369 N Rust preventive. OKS rust preventive to be used.
- 5.4 Rust preventives to be used whose shelf life is not less than one year.
- 5.5 Packing list with respect to each case to be prepared and given to HMT(I) along with other documents.
- 5.6 Machine / Equipment should be firmly fixed to be base of packing case to prevent jerking or local movement.
- 5.7 Delivery Voucher should clearly indicate packing case dimension with net and Gross weight and case number if there are more than one case.
- 5.8 Photographs before and after packing to be taken and sent to HMT(I).
- 5.9 Handling marks of the packing cases to be shown on packing cases.
- 5.10 Fumigation has to be conducted and fumigation certificate should be submitted to HMT(I)

PROFORMA FOR MANUFACTURER AUTHORIZATION FORM
(On Manufacturer's Letter Head)

Date :

The Assistant General Manager,
HMT (International) Limited,
No.59, Bellary Road,
Bangalore – 560 032

Sub: Manufacturer Authorization against tender No.for Supply, Installation /
Commissioning & Trials of “.....” for the Project: “Setting up of Gandhi-Mandela Centre of Specialisation
for Artisan Skills (GMCOS)”, Majuba, South Africa.

Dear Sir,

We, M/s..... (Insert Name of the Manufacturer) having registered office at(Insert Address of
the Manufacturer) by virtue of being manufacturer for(Insert Name of the product/s) hereby authorize
M/s.....(Insert Name of the bidder) having their office at(Insert Address of the bidder) to submit the bid,
negotiate, conclude the contract and provide after sales support for our range of products quoted by them to meet the above
mentioned tender requirements.

No company or firm or individual other than M/s.(Insert Name of the bidder) are authorized to bid and conclude the
contract for the above goods manufactured by us against the above referred tender.

The undersigned is authorized to issue such authorization on behalf of M/s..... (Insert Name of the
manufacturer).

For M/s. (Name of the Manufacturer)
Signature & Seal of the Company

LOT: 1 – SHEET METAL FORMING MACHINES

LOT 1(1) : HYDRAULIC GUILLOTINE SHEARING MACHINE WITH NC CONTROL

Project: “Setting up of “Gandhi Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.” in South Africa			
Ref: Enclosure 3/28			
Item : Guillotine 1-6 mm		Qty : 1 No.	
Sl. No.	Description		Qty
1.	Hydraulic Guillotine Shear with NC all standard accessories and Electrical suitable for 380/400V, 3Phase, 50Hz AC supply.		
1.1	Technical Specifications :		
1.1.1	Cutting capacity of MS Material (Length x Thickness)	≥ 3200 mm x 6 mm	
1.1.2	Working height	800 mm	
1.1.3	No. of strokes (Min)	9 - 22	
1.1.4	Variable Rake Angle	0.5 ° to 3 °	
1.1.5	No of Hold Downs Cylinders	16	
1.1.6	Motor power	10 HP	
1.2	Accessories:		
1.2.1	NC Controller	1 No.	
1.2.2	Servo drive with motor for X-axis movement.	1 No.	
1.2.3	NC back gauge with ball screw.	1 No.	
1.2.4	Timer belt.	1 No.	
1.2.5	Multiple back-gauge position with stroke counting on screen.	1 No.	
1.2.6	Automatic Rake angle adjustment from controller.	1 No.	
1.2.7	Lever operated blade clearance adjustment.	1 No.	
1.2.8	Electric control panel mounted on side frame.	1 No.	
1.2.9	Foot Switch	1 No.	
1.2.10	Front sheet support 1000mm Lg.	1 No.	
1.2.11	Squaring arm 1000mm Lg. mounted on right side.	1 No.	
1.2.12	Hardened transfer bars mounted on table.	1 No.	
1.2.13	Hold down cylinders mounted on machine	1 No.	
1.2.14	Pair of four edges HCHCR blade interchangeable & suitable to shear mild & stainless steel scale mounted on machine	1 No.	
1.2.15	Finger safety guard.	1 No.	
1.2.16	Machine lamp (Halogen)	1 No.	
1.2.17	Operation, Maintenance and spare parts manual	3 Sets per machine	
1.3	Colour: Dual Colour - Himmel Blue (RAL 5015) and Soft Grey (RAL 7035) Polyurethane Paint		
1.4	Set of mechanical and electrical spare parts for 2 years normal operation. • Please indicate the detailed list of spares in Technical bid without price.		1 set
1.5	Items required for E&C to be supplied with the machine:		
1.5.1	Touch up paint - 1 litre each, Brush- ½” – 2 nos., Cora cloth - 2 meters, Cotton waste - 1 kg		1 set
1.5.2	Initial fill of Hydraulic / Lubrication Oil packed in separate containers & sealed		1 set
1.5.3	Set of anti vibration mounting pads / Foundation bolts with leveling plates - 1 set		1 set

LOT 1(2): HYDRAULIC GUILLOTINE SHEARING MACHINE

Project: "Setting up of "Gandhi Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa." in South Africa		
Ref: Enclosure – 3/29		
Item : Guillotine 3-10 mm		Qty : 1 No.
Sl. No.	Description	Qty
1.	Hydraulic Guillotine Shear Motorised with Break motor, all standard accessories and Electrical suitable for 380/400V, 3Phase, 50Hz AC supply	
1.1	Technical Specifications :	
1.1.1	Cutting capacity of MS Material (Length x Thickness)	≥ 3050 mm x 10 mm
1.1.2	Working height	900 mm
1.1.3	No. of strokes (Min)	4 -12
1.1.4	Variable Rake Angle	0.5 ° to 3 °
1.1.5	No of Hold Downs Cylinders	16
1.1.6	Motor power	20 HP
1.2	Accessories:	
1.2.1	Electric control panel mounted on side frame	1 No.
1.2.2	Operational console mounted on front side	1 No.
1.2.3	Foot Switch	1 No.
1.2.4	Lever operated blade clearance arrangement with calibration	1 No.
1.2.5	Stroke adjustment rod with limit switch	1 No.
1.2.6	Front sheet support 1000 mm Lg.	1 No.
1.2.7	Squaring arm 1000 mm Lg. mounted on left side	1 No.
1.2.8	Hardened transfer bars mounted on table	1 No.
1.2.9	Motorized back gauge 1000 mm.	1 No.
1.2.10	Back gauge with ball screw & guide rod	1 No.
1.2.11	Hold down cylinders mounted on machine	1 No.
1.2.12	Pair of four edges HCHCR blade interchangeable & suitable to shear mild & stainless steel mounted on machine	1 No.
1.2.15	Finger safety guard.	1 No.
1.2.16	Machine lamp (Halogen)	1 No.
1.2.17	Operation, Maintenance and spare parts manual	3 Sets per machine
1.3	Colour: Dual Colour - Himmel Blue (RAL 5015) and Soft Grey (RAL 7035) Polyurethane Paint	
1.4	Set of mechanical and electrical spare parts for 2 years normal operation. • Please indicate the detailed list of spares in Technical bid without price.	1 set
1.5	Items required for E&C to be supplied with the machine:	
1.5.1	Touch up paint - 1 litre each, Brush- ½" – 2 nos., Cora cloth - 2 meters, Cotton waste - 1 kg	1 set
1.5.2	Initial fill of Hydraulic / Lubrication Oil packed in separate containers & sealed	1 set
1.5.3	Set of anti vibration mounting pads / Foundation bolts with leveling plates - 1 set	1 set

LOT 1(3): HYDRAULIC PRESS BRAKE

Project: "Setting up of "Gandhi Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa." in South Africa		
Ref: Enclosure – 3/30		
Item: Bending Brake		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1	Hydraulic Press Brake Capacity - 250T with all standard accessories and Electrical suitable for 380/400V, 3Phase, 50Hz AC supply suitable for inching, single stroke and Auto Operation.	

Project: "Setting up of "Gandhi Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa." in South Africa		
Ref: Enclosure – 3/30		
Item: Bending Brake		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1.1	Major specifications	
1.1.1	Bending capacity of MS Material (Length x Thickness)	
1.1.2	Tonnage Capacity	
1.1.3	Bending Cap. Of MS Material	
1.1.4	UTS of MS Material	
1.1.5	Clear Pass	
1.1.6	Ram Stroke	
1.1.7	Open Height	
1.1.8	Closed Height	
1.1.9	Throat Depth	
1.1.10	Approx. Speed Approach/Pressing/Return	
1.1.11	Motor	
1.2	Accessories	
1.2.1	Electrical control motor with selction of Auto, Inch & Single Cycle Auto	
1.2.2	Foot switches	
1.2.3	Lifting links	
1.2.4	Sheet supports	
1.2.5	Fin stroke adjustment rod with limit switches	
1.2.6	Front operated Manual back gauge 600 mm with Micro setting	
1.2.7	5 Way die stock and "V" punch	
1.2.8	Centralized lubrication system with hand pump	
1.2.9	Machine Lamp (Halogen)	
1.2.10	Pair of Sheet Support	
1.2.11	Operation, Maintenance and spare parts manual	
1.3	Colour: Dual Colour - Himmel Blue (RAL 5015) and Soft Grey (RAL 7035) Polyurethane Paint	
1.4	Set of mechanical and electrical spare parts for 2 years normal operation. Please indicate the detailed list of spares in Technical bid without price.	
1.5	Items required for E&C to be supplied with the machine:	
1.5.1	Touch up paint - 1 litre each, Brush- ½" – 2 nos., Cora cloth - 2 meters, Cotton waste - 1 kg.	1 set
1.5.2	Initial fill of Hydraulic & Lubrication Oil packed in separate containers & sealed	1 set
1.5.3	Set of Anti vibration Mounting pads /Foundation bolts with leveling plates	1 set

LOT 1(4): ROLL BENDING MACHINE

Project: "Setting up of "Gandhi Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa." in South Africa		
Item : Roll Machine to roll 1-10mm plate		
Ref: Enclosure – 3/31		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1.	Roll Bending Machine (Motorized) , Minimum Capacity 3000 mm x 10 mm with Manual centralized lubrication system, Reverse/forward roll drive with overload protection, Bending	1

Project: "Setting up of "Gandhi Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa." in South Africa		
Item : Roll Machine to roll 1-10mm plate		
Ref: Enclosure – 3/31		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
	rolls are made of Alloy steel, Bottom rolls are power driven, top roll adjustment by manual and with all standard accessories and Electrical suitable for 380V, 3 Phase, 50Hz AC supply.	
1.1	Technical Specifications	
1.1.1	Size	≥ 3000 mm x 10 mm
1.1.2	Dia Bottom Rolls	≥ 225 mm
1.1.3	Dia of Top Roll	≥ 250 mm
1.1.4	Dia Min Roll	≥ 500 mm
3.1.5	Plate Rolling Speed	3.5 meter / min
3.1.6	Type	3 Roll design Pyramid Shape
3.1.7	Motor Power	≥ 15 HP
3.2	Accessories	
3.2.1	Service Tool Kit	1 Set
3.2.2	Spare V Belts	1 Set
3.2.3	Operation, Maintenance and spare parts manual	3 Sets per machine
3.3	Colour: Dual Colour - Himmel Blue (RAL 5015) and Soft Grey (RAL 7035) Polyurethane Paint	
3.4	Set of mechanical and electrical spare parts for 2 years normal operation. Please indicate the detailed list of spares in Technical bid without price.	
3.5	Items required for E&C to be supplied with the machine:	
3.5.1	Touch up paint - 1 litre each, Brush- ½" – 2 nos., Cora cloth - 2 meters, Cotton waste - 1 kg	
3.5.2	Initial fill of Lubrication Oil packed in separate containers & sealed	
3.5.3	Set of anti vibration mounting pads / Foundation bolts with leveling plates - 1 set	

LOT-2 : PUNCH, SHEARING AND CROPPING MACHINE

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”			
Ref: Enclosure: 3/37		Qty: 1 nos.	
TECHNICAL SPECIFICATION			
Sl. No.	Item	Brief Specification	Quantity
	Punch, Shearing and cropping Machine (Hydraulic Ironworker) with all standard accessories and Electrical suitable for 380/400V, 3Phase, 50Hz, AC supply or 220/230V, Single Phase, 50Hz, AC supply		1
1	Major specifications		
1.1	PUNCHING		
1.1.1	Diameter x max. thickness	Ø 28 x 15 mm	
1.1.2	Diameter x thickness	Ø 38 x 11 mm	
1.1.3	Maximum Diameter	Ø 30-40 mm	
1.1.4	Stroke	80 mm	
1.1.5	Stroke count in (20 mm)	x 12	
1.1.6	Throat depth	220 mm	
1.1.7	Working height	955 mm	
1.2	STEEL BAR SHEAR		
1.2.1	Round / Square	Ø 40- 35 mm	
1.3	ANGLE SHEAR		
1.3.1	Angle section (90°)	120 x 120 x 12 mm	
1.3.2	Angle section (45°)	80 x 8 mm	
1.3.3	Working height	1155 mm	
1.4	SHEET METAL SHEAR		
1.4.1	Sheet metal	200 x 20 mm	
1.4.2	Sheet metal	300 x 15 mm	
1.4.3	Blade Length	317 mm	
1.4.4	Shearing with angle	80 x 10 mm	
1.4.5	Working height	955 mm	
1.5	NOTCHING		
1.5.1	Thickness	10 mm	
1.5.2	Width	42 mm	
1.5.2	Depth	100 mm	
1.5.3	Working height	955 mm	
1.6	Motor Power	4 kW	
1.7	Power (Pressure)	60 ton	
2	Colour of machine :	Dual Colour - Himmel Blue (RAL 5015) and Soft Grey (RAL 7035) Polyurethane Paint	
3	Set of mechanical and electrical spare parts for 2 year normal operation. (Each machine 1 Set) Please indicate the detailed list of spares in Technical bid without price.		1 Set
4	Operation, Maintenance and spare parts manual		3 Sets
5	Items required for Erection & Commissioning to be supplied with each machine.	• Touch up paint - 1/2 litre each colour in airtight sealed containers, Paint brush ½” 1 no. for each colour • Initial fill of Hydraulic/Lubrication/ Cutting Oil, if any in separate sealed containers. • Cotton waste- 2 kg, Cora cloth – 5 Mtrs • Set of anti vibration pads/Foundation bolts and leveling plates.	1 Set

LOT - 3 ELECTRO DISCHARGE MACHINE (EDM) CNC

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."		
Ref: Enclosure- 1/74		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1	CNC Electric Discharge Machine , consisting of Machine Tool Unit, Pump Filter Unit (Dielectric unit), Generator Unit, Programmable Multi Axis Controller along with all standard accessories and Electricals suitable for 3 phase 400V 50Hz AC.	1
2	Technical Specifications	
2.1	Machine Tool Unit	
2.1.1	Work tank internal dimensions (WxDxH)	
2.1.2	Work table dimensions	
2.1.3	Traverse (X, Y, Z)	
2.1.4	Maximum Job weight	
2.1.5	Maximum Job height	
2.2	Dielectric Unit	
2.2.1	Dielectric Capacity	
2.2.2	Paper Filtration system	
2.3	Generator Unit	
2.3.1	Working current	
2.4	Accessories	
2.4.1	Set of standard tools and machine accessories	
2.4.2	Flush aid complete	
2.4.3	Axis corrector assembly	
2.4.4	Clamping kit	
2.4.5	Master surface plate	
2.5	Operation/ Service/ Spare parts manual – 2 sets to be sent along with Machine and 1 set to HMTI, Bangalore	
2.6	Software package CD/pen drive	
2.7	Colour: Dual Colour - Himmel Blue (RAL 5015) and Soft Grey (RAL 7035) Polyurethane Paint	
2.8	Set of mechanical and electrical spare parts for 2 years normal operation. Please indicate the detailed list of spares in Technical bid without price.	
2.9	Items required for E&C to be supplied with the machine:	
2.9.1	Touch up Paint - 1 Litre each, Brush- ½" – 2 Nos., Cora Cloth - 2 Meters, Cotton Waste - 1 Kg.	
2.9.2	Set of additional MCB's as spares – 1 set	
2.9.3	Leveling plates/ Anti vibration leveling pads - 1 set	
2.9.4	Electrode component - Copper and steel of 70 mm dia with suitable profile – 3 set	
2.10	Additional Items to be supplied with the machine	
2.10.1	EDM oil packed in separate container & sealed in barrel of 210 litres capacity	3 Barrels
2.10.2	Servo Stabilizer – 3 phase, 400 V, 9KVA	1 No
2.10.3	Paper Filter element 10 micron	1 Set

LOT – 4 CNC WIRE CUT EDM MACHINE

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”		
Ref: Enclosure- 1/75		
		Qty : 1 No.
TECHNICAL SPECIFICATIONS		
Sl. No.	Description	Qty
1	CNC Wirecut EDM consisting of Machine Tool Unit, CNC Pulse Generator Unit, Programmable Multi Axis Controller, part programming system software and Dielectric system with paper filtration filter unit along with all standard accessories and Electricals suitable for 3 phase 400V 50Hz AC.	1
1.1	Table size	400 x 600 mm
1.2	Max. Workpiece height	400 mm
1.3	Max. Workpiece weight	400 Kg
1.4	Main Table Traverse (X, Y)	300, 400 mm
1.5	Max. Taper per 100 mm Thickness (cutting angle)	3 - 5 deg.
1.6	Wire diameter	0.18 mm
1.7	Max. Cutting Speed	≥ 100 mm ² /min
1.8	Machining Accuracy	0.01 mm
1.9	Best Surface Finish	Ra 1.25 to 1.75
1.10	CONTROLLER SPECIFICATIONS:	
1.10.1	Display	LCD
1.10.2	Control System	CNC with Memory Storage & USB Port for data back up
1.10.3	PC	Industrial PC with UPS
1.10.4	Axis Control	4 – Axes (X,Y,U,V) X,Y Axis Guide ways – Linear motion guide ways for X, Y axis
1.10.5	4 – Axes synthesizer	To cut different profiles at top & bottom
1.10.6	Resolution	0.001 mm
1.11	Interpolation function	Linear & Circular
1.12	Programming	Incremental
1.13	Least Input Increment	0.001 mm
1.14	Least Input command	0.001 mm
1.15	Data Input / Output System	USB Port, Regular Keyboard & Mouse. Shall read AutoCAD .dxf format
1.16	Graphic Display	Graphic display of part showing wire position
1.17	Processing and Data Entry	Dual Screen, New programs shall be entered while cutting previous programme.
1.18	Inbuilt database	For cutting different materials
1.19	Auto Stop	Auto Shut-off at the end of program
1.20	DIE ELECTRIC UNIT	
1.20.1	Tank Capacity	50 Ltrs.
1.20.2	Die Electric fluid	Water

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."		
Ref: Enclosure- 1/75		
		Qty : 1 No.
TECHNICAL SPECIFICATIONS		
Sl. No.	Description	Qty
1.20.3	Filtration system: Paper filter / cartridge	10 μ
1.21	STANDARD ACCESSORIES TO BE SUPPLIED ALONG WITH EACH EQUIPMENT	
1.21.2	Water Purification System	1 no.
1.21.3	EDM wire of 0.18 mm dia – Three spool of 2 Kms	1 set
1.21.4	Servo Control Voltage Stabilizer (3 phase) of suitable rating with bypass mode.	1 no.
1.22	ESSENTIAL ACCESSORIES TO BE SUPPLIED ALONG WITH EACH EQUIPMENT (If any).	
1.23	Operation/ Service/ Spare parts manual – 3 sets (2 Hard copies + 1 soft copy) to be sent along with Machine and 2 sets (1 Hard copy + 1 soft copy) to HMTI, Bangalore	5 sets (Total)
1.24	Colour:	Dual Colour {Himmel Blue (RAL 5015) and Soft Grey (RAL 7035) Polyurethane Paint}
1.25	Set of mechanical and electrical spare parts for 2 year normal operation. Please indicate the detailed list of spares in Technical bid without price.	
1.26	Items required for E&C to be supplied with the machine:	
1.26.1	Touch up Paint - 1 Litre each, Brush- ½" – 2 Nos., Cora Cloth - 2 Meters, Cotton Waste - 1 Kg.	
1.26.2	Set of additional MCB's as spares (If any)	1 Set
1.26.3	Leveling plates	1 Set
1.26.4	Foundation Bolts / Anti Vibration Elements (If any)	1 Set

LOT – 5 - AUTOMATIC PLASTIC INJECTION MOULDING MACHINE

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”		
Ref: Enclosure -1/78 - Automatic Plastic Injection Moulding Machine		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1	Automatic Plastic Injection Moulding Machine with SERVO motor & Gear pump with all standard accessories and Electrical suitable for 400V, 3Phase, 50Hz AC supply.	1
1.1	Major specifications	
1.1.1	Screw diameter	
1.1.2	Injection weight max.	
1.1.3	Injection pressure	
1.1.4	Screw rpm	
1.1.5	Clamping force	
1.1.6	Mould opening stroke	
1.1.7	Distance between Tie bars, H x V	
1.1.8	Mold thickness	
1.1.9	Ejector stroke	
1.1.10	Ejector force	
1.1.11	Ejector number	
1.1.12	Oil tank capacity	
1.2	Accessories	
1.2.1	Allen key set (mm series, 1.5 to 10mm, plate)	
1.2.2	Bigger Allen keys (12/ 14/ 17/ 19mm)	
1.2.3	Single ended spanners (36/41/46/55/60 mm)	
1.2.4	Double ended spanners (6-7/ 8-9/ 10-11/ 12-13/ 14-15/ 16-17/ 18-19/ 20-22/ 24-27/ 30-32 mm)	
1.2.5	“O” spanner for screw tip head body	
1.2.6	Injection screw spanner	
1.2.7	Injection cylinder – rod seal	
1.2.8	Injection cylinder – rod wiper	
1.2.9	Brass ferrules; 4mm & 6mm	
1.2.10	Magnetic grill for feed hopper	
1.2.11	Set of “O” Rings	
1.2.12	Operation, Maintenance and spare parts manual	
1.3	Colour: Dual Colour Himmel Blue (RAL 5015) and Soft Grey (RAL 7035) Polyurethane Paint	
1.4	Set of mechanical and electrical spare parts for 2 years normal operation. Please indicate the detailed list of spares in Technical bid without price.	
1.5	Items required for E&C to be supplied with the machine:	
1.5.1	Touch up Paint - 1 Litre each, Brush- ½” – 2 Nos., Cora Cloth - 5 Meters, Cotton Waste - 2 Kgs.	
1.5.2	Set of additional MCB's as spares (MCBs to be used in lieu of fuses)	
1.5.3	Initial fill of Hydraulic /Lubrication Oil packed in separate containers & sealed	
1.5.4	Anti-vibration mounting pads - 1 set	
1.5.5	Servo Stabiliser – 40Kva	
1.5.6	Three molds set- To produce/ manufacture 1) Flower pot 1ltr -1.2 ltr 2) Plate suitable for Flower pot 3) 1 litre cap mug with handle	
1.6	Tooling cost for Plastic Injection Machine	1 Set
1.6.1	Cooling Tower	
1.6.2	Color Mixer	

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”			
Ref: Enclosure -1/78 - Automatic Plastic Injection Moulding Machine			Qty : 1 No.
TECHNICAL SPECIFICATION			
Sl. No.	Description		Qty
1.6.3	PP material & Master batch	Molding grade 500 Kg & Master batch - (Red, yellow, blue, green, orange & Violet-2 kgs each)	
1.6.4	Scrap Grinder	100 kg / hr	
1.6.5	Hopper Dryer	75 kg	
1.6.6	Mold clamps	M16 threaded hole with clamp – 1 set	
Note:	Plastic injection moulding machine to be tested with Mould and proved with sample output and to be dispatched only after getting approval from HMT(I)		

LOT: 6 - CNC 3D COORDINATE MEASURING MACHINE

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."		
Ref: Enclosure – 1/77		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1	CNC 3D Coordinate Measuring Machine consisting of suitable Probe & Control system along with all standard accessories and Electrical suitable for 240V, 1Phase, 50Hz AC supply.	1
1.1	Major Specifications	
1.1.1	Traverses (X x Y x Z axes)	
1.1.2	Table size	
1.1.3	Resolution	
1.1.4	Measuring Accuracy MPEE (ISO 10360-02)	
1.1.5	Maximum Load on table	
1.1.6	Linear Velocity	
1.1.7	Volumetric Velocity	
1.1.8	Measuring Table	
1.1.9	Driving system	
1.2	Accessories	
1.2.1	Probe system - Renishaw	
A	Manual indexing Probe head with in-built Probe/Module indexing in step of 15 deg	
B	Styli Kit (suitable for above probe)	
1.2.2	Control system	
A	CNC controller	
B	Drive motors	
C	Encoders and scales	
D	Standard Joystick control unit	
1.2.3	Calibration Sphere (Ceramic)	
1.2.4	Operation, Maintenance and spare parts manual	
1.2.5	Operating Software	
1.2.6	Air Dryer with filter	
1.2.7	Clamping kit	
1.2.8	Suitable Servo Voltage Stabilizer	
1.2.9	Suitable Computer/Laptop along with printer	
1.3	Set of mechanical and electrical spare parts for 2 years normal operation. • Please indicate the detailed list of spares in Technical bid without price.	

LOT – 7 3D SCANNER AND 3D PRINTER

LOT-7(1): 3D SCANNER

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”		
Ref: Enclosure – 1/93		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1	3D Scanner along with all standard accessories and Electrical suitable for 240V, 1Phase, 50Hz AC supply.	1
1.1	Major Specifications	
1.1.1	Technology	
1.1.2	Scanning Speed	
1.1.3	Resolution	
1.1.4	Accuracy	
1.1.5	Application Areas	
1.2	System Requirements	
1.2.1	Operating System	
1.2.2	RAM	
1.2.3	Graphics	
1.2.4	Interface	
1.2.4	Operation, Maintenance and spare parts manual	
1.3	Set of mechanical and electrical spare parts for 2 years normal operation.	
	Please indicate the detailed list of spares in Technical bid without price.	

LOT-7(2) : 3D PRINTER

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”		
Ref: Enclosure – 1/94		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1	3D Printer along with all standard accessories and Electrical suitable for 240V, 1Phase, 50Hz AC supply.	1
1.1	Major Specifications	
1.1.1	Technology	
1.1.2	Maximum Buit Volume	
1.1.3	Base Materials	
1.1.4	Extruder Drive:	
1.1.5	Extruder configuration	
1.1.6	Maximum Bed Temperature	
1.1.7	Nozzle Diameter	
1.1.8	Accuracy	
1.1.9	Display	
1.1.10	Servo motors in X and Y	

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.”		
Ref: Enclosure – 1/94		Qty : 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1.2	Key Features	
1.2.1	Inbuilt Filament Storage Rack	
1.2.2	Active Filament Dry Box	
1.2.3	Suitable for Full-Scale Prototyping and Production	
1.2.4	Designed for Long-Term Industrial Use	
1.2.5	Complete auto bed level	
1.2.6	CE certified board	
1.2.7	Software should have Diagnostics of basic faults & indication with respect to hot end heaters & sensors	
1.2.8	Power failure or low power detection & auto-saving print status (which helps in resume on power failure)	
1.2.9	Operation, Maintenance and spare parts manual	3 Sets per machine
1.3	Set of mechanical and electrical spare parts for 2 years normal operation. Please indicate the detailed list of spares in Technical bid without price.	

LOT-8 : ADVANCED PROCESS WELDER, CAPABLE FOR GTAW, SMAW AND GMAW (PULSE)

Project: Setting up of “Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa		
Ref: Enclosure – 3/32		Qty : 4 Nos
Sl. No.	Description	
1	Advanced process welder, capable for GTAW, SMAW and GMAW (Pulse)	
	Advanced process welder, capable for GTAW, SMAW and GMAW (Pulse)- complete unit, inverter based power source, indefinitely variable current of 20 – 500A along with wire feeder, Torch & Trolley as per following specifications and accessories for easy maneuverability. (All accessories of the equipment shall confirm to ISI standard or equivalent).	
1.1	BRIEF SPECIFICATION:	
1.1.1	INPUT POWER:	
a.	Supply Voltage : 400 V	
b.	Phase / Frequency : 3 phase / 50 Hz	
1.1.2	OUTPUT POWER:	
a.	Open Circuit Voltage : 39 - 80 V	
b.	Welding Current Range : 20 to 500 A with a duty cycle of 500 Amps-39 Volts-50% Duty Cycle	
1.1.3	GENERAL:	
a.	Type of cooling : Forced air / Water cooling	
b.	Class of Insulation : H	
c.	Protection Class : IP23	
d.	Power factor: ≥ 0.91	
1.1.4	WIRE FEEDER:	
a.	Wire drive motor : suitable with Tacho feedback.	
b.	Wire Diameter : 0.8 to 1.6 mm	
c.	Wire Feed Speed : up to 18 m/min	
1.1.5	TORCH:	
a.	Torch : Gas Cooled	
1.2	ACCESSORIES TO BE SUPPLIED ALONG WITH EACH EQUIPMENT – EACH SET CONTAINING FOLLOWING	
1.2.1	Argon gas pressure regulator double stage double gauge with flow meter. The power source, wire feeder should be mounted on a cylinder trolley with suitable wheels for easy maneuverability.	1 Set
1.2.2	Suitable CO ₂ Gas hose of 5 meters length	1 No.
1.2.3	Welding cable and control cable of each 5 meters length	1 Set
1.2.4	Earthing cable and clamps of 5 meters length	1 Set
1.2.5	Welders cap	2 Nos.
1.2.6	Head shield	1 No.
1.2.7	Black and Plain Glass one number each	1 Set
1.2.8	Chipping hammer	1 No.
1.2.9	Wire brush	1 No.
1.2.10	Anti spatter spray (100 ml pack)	10 Nos.
1.2.11	Contact tip - suitable	25 Nos.
1.2.12	Tip holder	5 Nos.
1.2.13	Liner Steel / Teflon	3 Nos. each
1.2.14	Rollers V, U & Knurled	2 Nos. each
1.2.15	CO ₂ gas pressure regulator double stage double gauge with flow meter , Gas Preheater.	1 No. each

Project: Setting up of “Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa		
Ref: Enclosure – 3/32		Qty : 4 Nos
1.2.16	wire Aluminum silicon grade 4043 size 1.2mm approximately 7kgs	1 No. each
1.2.17	layer wound welding wire CCMS grade Er70S-6 of size 0.8mm / 1.2mm approximately 12.5kgs	2 No. each
1.2.18	flux cored welding wire stainless steel grade E308 LT-1 size 1.2mm approximately 12.5kgs	1 No. each
1.2.19	Each machine shall be supplied with carbon steel (MS) weld samples in sheets of sizes 200mmx75mm. Sheets are in thickness of 3.0/6.0mm and Qty is 400 No's, each. They are to be packed in batches of 5-10 pieces and wrapped in plastic film along with sufficient silica gel to reduce oxidation and for prolonged usage.	
1.2.20	Each machine shall be supplied with Stainless steel weld samples grade 304 in sheets of sizes 200mmx75mm. Sheets are in thickness of 3.0/6.0mm and Qty is 200 No's, each. They are to be packed in batches of 5-10 pieces and wrapped in plastic film along with sufficient silica gel to reduce oxidation and for prolonged usage.	
1.2.21	Each machine shall be supplied with Aluminum weld samples in sheets of sizes 200mmx75mm. Sheets are in thickness of 3.0/6.0mm and Qty is 200 No's, each. They are to be packed in batches of 5-10 pieces and wrapped in plastic film along with sufficient silica gel to reduce oxidation and for prolonged usage.	
1.3	SET OF SPARES FOR 2YEARS OF NORMAL OPERATION (EACH EQUIPMENT 1 SET) Please indicate the detailed list of spares in Technical bid without price.	
1.4	Operation, Maintenance and spare parts manual	3 sets per equipment

LOT-9 : WELDING MACHINES

LOT-9(1) : AC/DC TIG WELDING MACHINES (ALUMINIUM)

Project: Setting up of “Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa		
Ref: Enclosure – 3/33		Qty : 4 Nos
Sl. No.	Description	
1	AC/DC TIG Welding Machines (Aluminium)	
	AC/DC TIG Welding Machines (Aluminium) - complete unit with variable current of 20 – 300A along with Water cooling unit & Torch, mounted on a cylinder trolley with suitable wheels for easy maneuverability. As per following specifications and accessories. (All accessories of the equipment shall confirm to ISI standard or equivalent).	
a.	Water Cooling Unit with reservoir capacity above 12L, heat exchanger and flow sensing device for added protection.	
b.	Foot current control remote for TIG welding where the output current will increase when the welder increases the pressure on the foot remote but only to the set value of the current at the power source.	
1.1	BRIEF SPECIFICATION:	
1.1.1	INPUT POWER:	
a.	Primary Voltage: 400V	
b.	Phase / Frequency: 3 phase / 50 Hz	
c.	Max. Power: 17 KVA	
1.1.2	OUTPUT POWER:	
a.	Open Circuit Voltage: 18 – 70V	
b.	Welding Current Range: 20 – 300 A rated output 200Amps,18Volts-100% Duty Cycle	
1.1.3	Class of Insulation: F / H	
1.1.4	Cooling: Forced Air / Water cooling	
1.1.5	TIG WELDING CONTROL UNIT:	
a.	Protection Class: IP21 / IP23	
b.	Mode of Operation: 2 / 4 Track	
1.1.6	TORCH (suitable)	
1.1.7	Type of Cooling: water	
1.1.8	Electrode capacity: 1.6, 2.4, 3.2 & 4	
1.1.9	Foot current control remote: 1 no	
1.2	ACCESSORIES TO BE SUPPLIED ALONG WITH EACH MACHINE – EACH SET CONTAINING FOLLOWING	
1.2.1	Argon gas pressure regulator double stage double gauge & flow meter	1Set
1.2.2	Suitable Argon Gas hose of 5 meters length	1 No.
1.2.3	Earthing cable and clamps of 5 meters length	1 Set
1.2.4	Welders cap	2 Nos.
1.2.5	Head shield	1 No.
1.2.6	Black and Plain Glass one number each	1 Set
1.2.7	Hand gloves and leg guard one pair each	1 Set
1.2.8	Chipping hammer	1 Set
1.2.9	Wire brush	1 No.
1.2.10	Tungsten Electrode 2% zirconated & 2% thoriated dia. 2.4, 3.2	10 Nos. each
	Ceramic Nozzle Dia. 6.0, 12.0	10 Nos. each
	Collet for dia. 2.4, 3.2	2 Nos. each

	Long cap	2 Nos. each
1.2.11	Mild steel weld samples in sheets of sizes 200mmx75mm. Sheets are in thickness of 1.6/3.15/6.0mm and Qty is 25 No's, each. They are to be packed in batches of 5-10 pieces and wrapped in plastic film along with sufficient silica gel to reduce oxidation and for prolonged usage.	
1.2.12	Stainless steel weld samples grade 304 in sheets of sizes 200mmx75mm. Sheets are in thickness of 1.2/3.15mm and Qty is 25 No's, each. They are to be packed in batches of 5-10 pieces and wrapped in plastic film along with sufficient silica gel to reduce oxidation and for prolonged usage.	
1.2.13	Aluminum weld samples in sheets of sizes 200mmx75mm. Sheets are in thickness of 3.15/6.0mm and Qty is 25 No's, each. They are to be packed in batches of 5-10 pieces and wrapped in plastic film along with sufficient silica gel to reduce oxidation and for prolonged usage.	
1.2.14	filler welding wire CCMS of size 1.6mm approximately 5 kgs.	
1.2.15	filler welding wire Aluminum silicon grade 4043 size 3.15mm approximately 2 kgs.	
1.2.16	filler welding wire stainless steel grade 304 size 1.2mm approximately 2 kgs.	
1.3	SET OF SPARES FOR 2 YEARS OF NORMAL OPERATION (EACH MACHINE 1 SET)	
	Please indicate the detailed list of spares in Technical bid without price.	
1.4	Operation, Maintenance and spare parts manual	3 sets per equipment

LOT-9(2) : PORTABLE ARC WELDING MACHINE

Project: Setting up of "Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa		
Item : PORTABLE ARC WELDING MACHINE		
Ref: Enclosure –3/34		Qty : 6 Nos
Sl. No.	Description	
2	PORTABLE ARC WELDING MACHINE complete unit operating with 3 Ph, 400V, 50 Hz AC, as per the following specifications.	
a.	Output Terminals for welding leads should be protected from accidental electrical contact by personnel or by metal objects. Protection may be obtained by use of: Dead-front receptacles for plug connections; recessed openings with non-removable hinged covers; heavy insulating sleeving or taping or other equivalent electrical and mechanical protection.	
b.	Voltage reducing device that protects the welder from the shocks caused by the open circuit voltage in confined spaces or at heights. As soon as the welder stops welding, the open circuit voltage reduces to below 24v keeping the welder safe. .	
c.	Digital Display of welding current / welding voltage by changeover switch.	
d.	Overload protection as standard .	
2.1	BRIEF SPECIFICATION:	
2.2	INPUT POWER:	
a.	Primary Voltage /Phase / Frequency: 400V/3 phase/50 Hz	
b.	Input Power @ 100% Duty Cycle: 21 KVA	
c.	Input current @ 100% Duty Cycle: 45 A	
2.3	OUTPUT POWER:	
a.	Open Circuit Voltage: 80 V	
b.	Welding Current Range: 60 – 600 A	
c.	Max. Welding Current @ 60% Duty Cycle: 600 A	
d.	Max. Welding Current @ 100% Duty Cycle: 465 A	
e.	Welding Electrode Range: 2.– 6.3 mm	
2.4	GENERAL:	
a.	Type of cooling: Forced Air	
b.	Class of Insulation: H	
c.	Protection Class: IP23	

2.5	ACCESSORIES TO BE SUPPLIED ALONG WITH EACH EQUIPMENT-EACH SET CONTAINING FOLLOWING:	
2.5.1	Welding cable – 5 meters	1 No.
2.5.2	Electrode holder	2 Nos.
2.5.3	Earth cable – 5 meters	1 No.
2.5.4	Earthing clamp	1 No.
2.5.5	Welders cap	2 Nos.
2.5.6	Hand shield	1 No.
2.5.7	Black glass	1 No.
2.5.8	Plain glass	2 Nos.
2.5.9	Hand gloves	1 Pair
2.5.10	Leg guard	1 Pair
2.5.11	Chipping hammer	1 No.
2.5.12	Wire brush	1 No.
2.5.13	Container bag	1 No.
2.5.14	General purpose Welding electrodes, 20kg box	5 Boxes
2.6	SET OF SPARES FOR 2 YEARS OF NORMAL OPERATION (EACH EQUIPMENT 1 SET)	
2.6.1	Please indicate the detailed list of spares in Technical bid without price.	
2.7	Operation/ Service/ Spare parts manual – 2 Sets to be sent along with Machine and 1 Set to HMTI, Bangalore.	1 No.

LOT-9(3): SUBMERGED ARC WELDING

Project: Setting up of “Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa		
Item : SUBMERGED ARC WELDING		
Ref: Enclosure -3/35		Qty : 1 No
Sl. No.	Description	
3	SUBMERGED ARC WELDING: Submerged Arc Welding complete unit operating on 3 Phase 400V, 50Hz, AC, diode/inverter based power source of welding current output of 1200 A along with Welding Head , mounted on suitable wheels for easy manourablity as per following specifications and accessories.	
3.1	BRIEF SPECIFICATION:	
3.2	INPUT POWER:	
a.	Power supply: 400V	
b.	Phase / Frequency: 3 phase / 50 Hz	
c.	Rating @ 60% Duty Cycle: Max. 54 KVA	
3.3	OUTPUT POWER:	
a.	Welding Current (Max): 1200 A	
b.	Open Circuit Voltage Range: 20 to 80 V	
c.	Max. Welding Current @ 60% Duty Cycle: 1200 A	
d.	Max. Welding Current @ 100% Duty Cycle: 1000 A	
e.	Type of Insulation: H Class	
f.	Type of Cooling: Forced Air	
3.4	WELDING HEAD:	
a.	Max welding current @ 60% duty cycle: 1500 A	
b.	Max welding current @ 100% duty cycle: 1250 A	
c.	Wire Dia: 2,2.5,3,4,5 mm	
d.	Wire Speed Range: 0.5 – 4 meters per min	
3.5	Control Unit:	
i.	Input Power: 42-110V / 1 phase / 50 Hz	
ii.	Range of Adjustment:	

Project: Setting up of “Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa		
Item : SUBMERGED ARC WELDING		
Ref: Enclosure -3/35		Qty : 1 No
Sl. No.	Description	
a.	Vertical (Z): Min 100 mm (Motorised)	
b.	Horizontal (X): Min 100 mm (Motorised)	
c.	Horizontal (Y): Min 140 mm (Manual)	
d.	Transverse to Head Travel: 45 Degree	
e.	Parallel to Head Travel: 30 Degree	
f.	Horizontal Swing: Min 270 Degree	
g.	Standard Bore for Spool: 285 to 315 mm	
h.	Flux Hooper Capacity: 10 Kgs	
i.	Wire reel capacity: 25 Kgs.	
3.6	ACCESSORIES TO BE SUPPLIED ALONG WITH EACH EQUIPMENT – EACH SET CONTAINING FOLLOWING	
3.6.1	Set of Welding cables and Control cable each of 5 meters length (90 sq mm)	1 Set
3.6.2	Earthing cable and clamps of 5 meters length	1 Set
3.6.3	Welders cap	2 Nos.
3.6.4	Hand gloves and leg guard one pair each	1 Set
3.6.5	Chipping hammer	1 No.
3.6.6	Wire brush	1 No.
3.3.7	Container bag	1 No.
3.3.8	Welding consumables SAW wire of dia. 3.15 - 25 kg spool	7 Nos.
3.3.9	Flux: 25 kg bag	4 Nos.
3.3.10	Wire cutter- for cutting upto 5 mm wire	1 No.
3.3.11	Nozzle 3 mm	15 Nos.
3.3.12	Roller 3 mm	2 Nos.
3.7	SET OF SPARES FOR 2 YEARS OF NORMAL OPERATION (EACH EQUIPMENT 1 SET)	
3.7.1	Please indicate the detailed list of spares in Technical bid without price.	
3.8	Operation/ Service/ Spare parts manual – 2 Sets to be sent along with Machine and 1 Set to HMTI, Bangalore	1 No.
3.9	SAW WELDING TABLE	
3.9.1	The table should be of pipe construction 50x3mm with table top sheet 6mm, travel length 1250mm, height 750mm. facility to collect unused flux supplied with flux collecting tray & brush	1 No.

LOT-9(4): SPOT WELDING MACHINE

Project: Setting up of “Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa		
Item : SPOT WELDING MACHINE		
Ref: Enclosure - 3/36		Qty : 1 No
Sl. No.	Description	
4	SPOT WELDING MACHINE: Spot Welding Machine/Equipment complete unit operating across 2 phase, 400 V,50 Hz AC, rated 25 KVA equipped with a 4 function synchronous CMOS IC control & Thyristor panel including all standard accessories as per following specifications and accessories.	
4.1	BRIEF SPECIFICATION:	
4.2	INPUT POWER:	
a.	Power supply: 400 V	

b.	Phase / Frequency: 2 phase / 50 Hz	
c.	Rating @ 50% Duty Cycle: 25 KVA	
4.3	MACHINE / EQUIPMENT DATA:	
a.	Throat depth: 450 mm	
b.	Rating @ 50% Duty Cycle: 25 KVA	
c.	Max secondary short circuit current at throat depth 450 mm: 14 KA	
d.	Standard stroke: 50 mm	
e.	Throat gap: 315 mm	
f.	Max electrode force at 5.6 Kg/cm ² : 440 kg	
g.	Weld cylinder dia: 100 mm	
h.	Foot switch to operate the machine	
4.4	ACCESSORIES TO BE SUPPLIED ALONG WITH MACHINE / EQUIPMENT	
4.4.1	Welding Electrodes	20 Nos.
4.4.2	Air Valve	1 No.
4.4.3	Filter Regulator & Lubricator (FRL)	1 No.
4.4.4	Copper Flex	1 No.
4.4.5	Thyristor	1 No.
4.4.6	Seal kit	1 No.
4.4.7	Filter card	1 No.
4.4.8	24 V DC Air valve coil (1/4 " BSP)	1 No.
4.4.9	Spare MCBs	1 No.
4.5.10	Each machine shall be supplied with carbon steel (MS) weld samples in sheets of sizes 100mmx75mm. Sheets are in thickness of 1.2mm and Qty is 100 No's,. They are to be packed in batches of 5-10 pieces and wrapped in plastic film along with sufficient silica gel to reduce oxidation and for prolonged usage.	
4.5	SET OF SPARES FOR 2 YEARS OF NORMAL OPERATION (EACH EQUIPMENT 1 SET)	
4.5.1	Please indicate the detailed list of spares in Technical bid without price.	
4.6	Operation/ Service/ Spare parts manual – 2 Sets to be sent along with Machine and 1 Set to HMTI, Bangalore.	1 No.

LOT-10 HYDRAULIC & PNEUMATIC ITEMS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS), Majuba, South Africa." in South Africa				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	2A/183	Hydraulics board with components and pipes	The Hydraulic Trainer Table top unit with Aluminum Profile with panels, hydraulics components and pump for training purposes. Work Table of dimension approximately 1100 – 1300 mm (L) x 600 – 700 mm (W), 890 - 910 (H). with castor wheels & lock mechanism. The Hydraulic Trainer Kit shall be capable of being used to demonstrate the design, construction and application of Hydraulic components and circuits. The kit shall be designed to satisfy the following objectives: • Design and function of a Hydraulic System • Function of Valves • Symbols & Basic Circuit Diagrams on practical applications. • Fault finding setup All of the components fit securely and safely on Aluminum profile panel with grooves. Each component includes a fixing system devised in such a way as to aid the quick and simple preparation of the practical exercises. The Hydraulic Trainer Kit consists following components with fault finding accessories: • Hydraulic power pack of operating pressure of at least 40 bar. • Actuators with single / double acting cylinder • Pressure Control valves • Flow valves • Distribution valves • Connection parts & accessories • Control modules, sensors & electrical accessories The detailed list of above components to be submitted in the technical bid. Accessories to be provided with the trainer: • Well written students workbook explaining experiments with instructor guide – 1no. • Spanner set : 1 No.	2

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS), Majuba, South Africa." in South Africa				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
			- Oil tray MS : 1 No. - Thread seal Tape : 1 No. - Mains cord – 1set Operation, Maintenance and spare parts manual-3 sets Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price.	
2	2A/184	Pneumatics board with components and pipes	The pneumatic Trainer Table top unit with Aluminum Profile with panels, pneumatic compressor and pump for training purposes. Work Table of dimension approximately 1100 – 1300 mm (L) x 600 – 700 mm (W), 890 – 910 mm (H). with castor wheels & lock mechanism. The pneumatic Trainer Kit shall be capable of being used to demonstrate the design, construction and application of pneumatic components and circuits. The kit shall be designed to satisfy the following objectives: - Design and function of a pneumatic System - Function of Valves - Symbols & Basic Circuit Diagrams on practical applications. - Fault finding setup All of the components fit securely and safely on Aluminum profile panel with grooves. Each component includes a fixing system devised in such a way as to aid the quick and simple preparation of the practical exercises. The pneumatic Trainer Kit consists following components with fault finding accessories: - The pneumatic Compressor of operating pressure of Minimum Pressure: 7 Kg. / Cm2. - Actuators with single / double acting cylinder - Air distribution & Control - Air filter & Regulator Unit - Solenoid valves - Push button valves - way Roller Lever Operated Valve - Quick Exhaust Valve - AND Gate Valve - ORGATE Valve - Other Flow control valves	2

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS), Majuba, South Africa." in South Africa				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
			• Gauges • Connection parts & accessories • Control modules, sensors & electrical accessories The detailed list of above components to be submitted in the technical bid. Accessories to be provided with the trainer: • Well written students workbook explaining experiments with instructor guide – 1no. • Spanner set : 1 No. • Thread seal Tape : 1 No. • Mains cord – 1set Operation, Maintenance and spare parts manual-3 sets Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price.	

LOT: 11 - ELECTRICAL MACHINE TRAINERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1.	2A/1	Electrical Machine Trainer	Electrical Machines Trainer set should consist of the following features : Technical Specifications : Powder coated Sturdy aluminum Flat panel system carrying various high voltage components housed in plastic enclosures to minimize shock possibility. Each control panel rack should consist of : - a) Input 3 phase DOL Starter panel - 1 No. • 4 pole DC/AC MCB. • DOL Contactor. • Bimetallic thermal O/L relay. b) Integrated AC (1 phase) measurement panel - 1 No. • 1 no. Digital meter for 1 Ph. Parameters V, I, PF, W, VA, VAR, Hz, etc. c) Multifunction 3 Phase Meter - 1 No. • Measurement : V, I, Hz, Pf, KVA, KW, KWh • Computer Input : Modbus RTU RS 485 d) FWD/REV, Star-Delta starter panel - 1 No. e) 3 Phase wound Rotor & Sync. Motor panel - 1 No. • Rotor resistors with selector switch. f) 1 Phase Motor, Alternator & Sync. Motor Panel - 1 No. • Selector switches to run as 1ϕ alternator then as synchronous motor. g) DC voltmeter and DC ammeter panel - 1 No. • DC voltmeter(0-300V) • DC Ammeter (0-5A) with polarity protection diode h) SCR Actuator (variable DC) cum sensor signal conditioning panel - 3 Nos. • Full bridge SCR based cosine firing with linear characteristics. i) Instrumentation Power supply cum Multichannel DPM panel - 1 No. j) Resistor Load Panel - 1 No. k) LC Load panel - 1 No. l) Computer Interface panel connects to PC USB port using USB IO module. Software on CD: Virtual Workbench package (USB	2 sets

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			/ serial modbus based) software working on windows dot Net platform coupled with USB IO module – 1 No. m) Synchronizaion Panel: Test gear for Synchronising of 2Nos. of 3 phase Generator (3 phase AC machines). n) Machine set should consists of following machines: • DC Integrated machine - 1 No. Capacity/RPM/Terminals : 300 W / 2 Pole m/c / 1500 RPM 6 terminals. It should be used as Dynamometer with torque & speed sensors. Must be able to work as shunt/series/compound motor as well as generator. • 3 Phase AC Integrated chassis mounted m/c - 1 No. Capacity/RPM/Terminals : 300 W / 4 Pole m/c / 1500 RPM 10 terminals. • 1 Phase AC Integrated chassis mounted m/c - 1 No. Capacity/RPM/Terminals : 300 W / 4 Pole m/c / 1500 RPM 10 terminals. • 1 Phase AC Integrated generator & Synchronous m/c - 1 No. Capacity/RPM/Terminals : 300 W / 4 Pole m/c / 1500 RPM 4 terminals. • Universal Motor AC/DC integrated, chassis mounted - 1 No. Capacity/RPM/Terminals : 300 W / 4 Pole m/c / 1600/1500 RPM 4 terminals. • 3 phase squirrel cage motor, 2 speed chassis - 1 No. Capacity/RPM/Terminals : 300 W / 4 Pole m/c / 1600/1500 RPM 12 terminals Applications: Motor should work as Induction generator, Torque speed curve in both motor as well as generator mode. • Repulsion Motor chassis mounted - 1 No Voltage : 230VAC, 50Hz Capacity/RPM/Terminals : 300 W / 4 Pole m/c / 1500 RPM 2 terminals • 3 Phase Salient Pole alternator – 1 No. Capacity/RPM/Terminals : 300 W / 4 Pole m/c / 1500 RPM Winding Temp. : A embedded Thermistor for monitoring winding temperature Following Essential accessories should be provided with trainer: A. Hand held tacho meter – 1 No. B. Shrouded patch chord – 120 Nos. C. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No.	

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			D. Demo CD to help student to work by themselves – 1 No. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
2	2A/3	3 Phase AC Motor Fault Simulator	The 3 Phase AC Motor Fault Simulator should have following features : Technical Specifications : Powder coated Sturdy aluminum Flat panel system carrying various high voltage components housed in plastic enclosures to minimize shock possibility. It should consists of : a) Input 3 phase DOL Starter panel – 1 No. • 4 pole MCB. • DOL Contactor. • Bimetallic thermal O/L relay. b) AC voltmeter panel – 1 No. c) AC Ammeter panel – 1 No. d) Integrated AC (3/1 phase) measurement panel (Digital) - 1 No. e) FWD/REV, Star-Delta starter panel – 1 No. f) 3 Phase sequence indicator Panel – 1 No. For determination of over voltage, under voltage, single phasing and reverse phasing / Displays OV, UV, SP, RP on digital display g) Single Phasing Panel – 1 No. Three single-phase (SP) fault switches (DPST) one for each phase. h) Grounding & Protection Panel – 1 No.	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			i) 3 Phase Induction Motor Fault Simulator Panel – 1 No. <u>Motor Specifications :</u> 3 phase squirrel cage induction motor, 0.5 HP, 4 pole, 1500 RPM, 6 terminal (delta 220 Vac / star 440 Vac) motor with built in thermal cutout (NC contact). The Trainer should be capable of performing following experiments : 1. Over current. 2. Under current. 3. High Temperature 4. Single phasing 5. Reverse phasing 6. Under voltage. 7. Over voltage 8. Winding open Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price.. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 – 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
3	2A/6	Electrical Trainer	The Electrical Trainer should have following features : <u>Technical Specifications :</u> Powder coated Sturdy aluminum Flat panel system carrying various high voltage components housed in plastic enclosures to minimize shock possibility. It should consists of : i) Single phase Transformer of 300 VA – 2 Nos.	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			Primary: 0 -230 V Secondary: 200 V ii) Three phase Transformer of 300 VA – 1 No. Primary: 0 -415 V Secondary: 220 V List of panels : a) Input 3 phase DOL starter panel • 4 pole MCB. • DOL Contactor. • Bimetallic thermal O/L relay. b) 3 Ph. Digital Multifunction measurement panel • Measurement of V, I, Hz, Pf, KVA, KW, KWH • Modbus RTU RS 485 c) Integrated (1 Ph.) Multifunction measurement panel • Measurement of V, A, Hz, PF, KW, KVA, KVA_r, Energy. d) FWD/REV, Star-Delta starter panel FWD/REV, 3 pole 3 way switch with centre OFF. e) 1 ph. AC Input Panel MCBs of 4A/1.6A 1 each. f) AC voltmeter panel AC voltmeter for three phase voltage measurement by selector switch. g) AC Ammeter panel AC Ammeter for three phase current measurement by selector switch. h) Resistive Load • AC Resistors • DC Resistors i) Lamp Load Panel Each panel consists of 15/40/60/100W X 3 bulbs with individual ON/OFF. The Trainer should be capable of performing following experiments : 1. Study of Manufacturing Quality Tests. 2. Study of Insulation resistance test. 3. Study of Turns ratio test 4. Study of Polarity test. 5. Study of Performance tests. 6. Study of Open circuit test 7. Scott connection : Using 2 nos. of 1 ph. Transformer	

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			8. Study of Load regulation test. 9. Study of Back to back test (sumpner test) 10. Study of Winding temperature rise test. 11. Measurement of winding resistance by DC V-I method. 12. Study of effect of type of load on transformer output waveform 13. Study of Parallel operation of single-phase transformers 14. Study of Scott connection for 3phase to 2 phase conversion 15. Three phase transformers - basic configurations – their effect on capacity utilization regulation. 16. Study of Phasor Groups in 3 Phase Transformer connections 17. Study of using Tertiary winding on 3 ph. transformers for suppressing harmonics. 18. Study of Load regulation, efficiency & Temp. rise test on 3 ph. Transformers 19. Study of Manufacturing Quality Tests on 3 phase transformers 20. Study of Short circuit test 21. Determination of zero sequence reactance of 3 ph. transformer. 22. Determination of equivalent circuit of 3 ph. Transformer 23. Self & mutual inductance measurement of 1 phase transformer 24. Determination of equivalent circuit of 3 ph. transformer. Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal operation Please indicate the detailed list of spares in Technical bid without price.. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
4	2A/7	3-Phase Induction Motor Speed	3 Phase Induction Motor Speed Control Trainer should have the following features:	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
		Control Trainer	Technical Specifications : Powder coated Sturdy aluminum Flat panel system carrying various high voltage components housed in plastic enclosures to minimize shock possibility. a) 1Φ Motor, Alternator & Sync. Motor Panel 1Φ MCBs - 2nos, bulb load. b) Integrated AC (1 phase) measurement panel - Digital meter for 1 ph. parameters V, I, PF, W, VA, VAR, Hz, etc. c) AC voltmeter panel - Voltage range : 500V. - Switch to select line voltage for three phase d) Dual range AC ammeter panel - Current range: 2A/6A. - Switch to select phase current for three phase e) IGBT Controlled AC Drive panel - Input voltage: 230VAC. 50Hz - Output voltage: 3 phase 200 to 230VAC - Range (Frequency Control) : 0.1 Hz to 100 (400)Hz - Control Mode: Sine Wave PWM - Capacity : 0.5 HP f) Motor specifications : 3 phase squirrel cage induction motor, 0.5 HP, 4 pole, 1500 RPM, 6 terminal (delta 220Vac/star 440Vac) motor foot mounted on chassis, brake pulley and drive panel with Hand held Tachometer for speed measurement Accessories: Eddy brake for loading with the panels for DC measurement, Torque & Speed measurement List of Experiments : - Study of Speed-Torque Characteristics of 3 Ph. Squirrel Cage Induction Motor & to verify constant v/f ratio. - Study of Efficiency of AC Motor. - Study of Speed-Torque Characteristics of AC Motor. Following Essential accessories should be provided with trainer: - Hand held tacho meter – 1 No. - Shrouded patch chord – 120 Nos. - Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. - Demo CD to help student to work by themselves – 1 No. - Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in	

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			Technical bid without price.. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
5	2A/8	3-Phase Induction Motor Fault Simulator	The Motor Fault Simulator Trainer should have following features : • Should facilitate easy learning about fault characteristics of ubiquitous squirrel cage induction motor. • Should facilitate easy learning about troubleshooting through introduction of fault switches. Technical Specifications : Powder coated Sturdy aluminum Flat panel system carrying various high voltage components housed in plastic enclosures to minimize shock possibility. It should consists of : a) Input 3 phase DOL Starter panel • 4 pole MCB. • DOL Contactor. • Bimetallic thermal O/L relay. b) AC voltmeter panel • AC voltmeter for three phase voltage measurement by selector switch. c) AC Ammeter panel • AC Ammeter for three phase current measurement by selector switch. d) Integrated AC (3/1 phase) measurement panel • Digital meter for measurement of 3Ø & 1Ø parameters. • Voltage line to line & line to neutral. • Current for all 3Ø. • Power factor, frequency, watts, VAR, VA and energy in Kwhr. e) FWD/REV, Star-Delta starter panel	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			- FWD/REV, 3 pole 3 way switch with centre OFF. f) 3 Phase sequence indicator Panel - Study of 3 phase Electric utility supply - Determination of over voltage, under voltage, single phasing and reverse phasing / Displays OV, UV, SP, RP on digital display g) Single Phasing Panel - Three single-phase fault switches (DPST) h) Grounding & Protection Panel i) 3 Phase Induction Motor Fault Simulator Panel Motor Specifications : 3 phase squirrel cage induction motor, 0.5 HP, 4 pole, 1500 RPM, 6 terminal (delta 220 Vac/star 440Vac) motor with built in thermal cutout (NC contact). Fault simulator built on the panel on top of motor. Sturdy toggle switches to introduce faults. The Trainer should be capable of performing following experiments : - Over current - Under current - High Temperature - Single phasing - Reverse phasing - Under voltage - Over voltage - Winding open Following Essential accessories should be provided with trainer: - Shrouded patch chord – 120 Nos. - Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. - Demo CD to help student to work by themselves – 1 No. - Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price.. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : - Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. - Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be	

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
6	2A/12	Distance Protection Relay Trainer	The Distance Protection Relay Trainer set should consist of the following features: - The trainer should consist of RL Transmission Line (125Kms / 250kms), trip relay logic etc. Technical Specifications of interfacing panels: Powder coated Sturdy aluminum Flat panel system carrying various high voltage components housed in plastic enclosures to minimize shock possibility. Should consist of : a) Input 3 phase DOL Starter panel 4 pole MCB. - DOL Contactor. - Bimetallic thermal O/L relay - Separate NO contact & NC. b) 1 phase AC Input supply panel - MCBs - Bulb Load. c) 3 Phase Bidirectional Multifunction Power cum Energy meter panel - V, I, Hz, Pf, KVA, KW, KWH. - Modbus RTU RS 485 connections d) Distance Relay Panel 2 NO Trip contacts, 1 NC Trip contacts, 1 NO Auto reclose contact. e) CT panel - CT - 6 Nos. f) Star/Star Step Down Transformer Panel g) FWD-OFF-REV, Switch Panel 3 pole 3 way switch with center OFF, 6A/440V. h) Transmission line Panel - Table Top Panel consisting of : - Simulated model for short transmission line using R, L & C - 6 No. each component. - Simulated model for medium length 125kms & long length 250kms transmission line. - Forced Air cooled. i) Resistive Load panel - Table Top Panel consisting of : 3 nos of resistors with switch for selection of different values	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			- Forced Air cooled. j) Protection relay type (Numerical) : - Numerical type distance protection relay - RS232 port for PC communication, relay setting with software on CD, RS232 to USB converter for USB interface. The above trainer should cover following experiments: - To perform experiment for distance protection of transmission line LG, LL, LLG, LLL, LLLG. - To perform experiment for auto reclose function of the relay for transient type faults. Following Essential accessories should be provided with trainer: - Shrouded patch chord – 120 Nos. - Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. - Demo CD to help student to work by themselves – 1 No. - Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price.. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : - Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. - Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
7	2A/13	Feeder Protection Relay Trainer	The Feeder Protection Relay Trainer should consist of the following features: - The trainer should consist of voltage injector, current injector, elapsed time counter (1 msec resolution), trip relay logic etc. Technical details : a) Input 3 phase DOL Starter panel 4 pole MCB - DOL Contactor - Bimetallic thermal O/L relay	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			b) 1 phase AC Input supply panel • MCBs • Bulb Load. c) Variable voltage & current injector panel - 3 Nos. • 1 phase dimmer • Short circuit transformer d) 3 Phase Multifunction Power cum Energy meter panel • V, I, Hz, Pf, KVA, KW, KWH. • Modbus RTU RS 485 e) Over current & elapsed time measurement panel - 3 Nos. • AC ammeter • Elapsed time counter f) FWD-OFF-REV, Switch Panel • 3 pole 3 way switch with center OFF. g) Variable voltage panel - 3 Nos. • 1 phase dimmer h) CT panel • CT 6 Nos. i) Star/Star Step Down Transformer Panel j) Feeder Manager Relay Panel • USB port for PC communication, relay setting with software on CD. List of Experiments: 1. To perform experiment on IDMT over current protection. 2. To perform experiment on under/over voltage protection. 3. To perform experiment on under/over frequency protection. 4. To perform experiment on earth fault protection. 5. To perform experiment on negative sequence over current protection. 6. To perform experiment on zero sequence over voltage protection. 7. To perform experiment on negative sequence over voltage protection. 8. To perform experiment local breaker backup (LBB) function protection Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in	

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			Technical bid without price.. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
8	2A/18	Double Bus Bar Trainer	The Double Bus Bar Trainer should have following features : • The requirements of the both the grid and the power station operation are to be in practice oriented way. • The Double bus bar setup should be used for 3 bus and four bus load flow study. Technical Specifications Powder coated Sturdy aluminum Flat panel system carrying various high voltage components housed in plastic enclosures to minimize shock possibility. It should consists of : a) Input 3 phase DOL Starter panel • 4 pole MCB. • DOL Contactor • Bimetallic thermal O/L relay b) Phase Bidirectional Power cum Energy meter panel • Should measure V. I., Hz, Pf, KVA, KW, KWH c) 24V Aux power supply panel. d) In feeder Panel • 3-isolator switches, Circuit breaker, Main bus, Reserve bus, Feeder. e) Bus Coupler Panel - 2 Nos. • Consisting of Circuit breaker, Main bus, Reserve bus. f) Out feeder Panel • 4-isolator switches, Circuit breaker, Main bus, Reserve bus, Transfer bus / Earth switch, Feeder. g) Section Coupler Panel.	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			2 Circuit breakers, Main bus, Reserve bus. h) Transmission line panel 2 Transmission lines of 0.3pu for 125Km. 2 Transmission lines of 0.2pu for 75Km. 1 Transmission line of 0.13pu for 50Km. i) RLC load Panel 3 nos of Resistors, Inductors & Capacitors with switch for selection of difference values The Trainer should be capable of performing following experiments : 1) Single busbar operation with two incoming feeders. 2) Double busbar operation with two incoming feeders. 3) Busbar change without interruption. 4) 3 bus power flow study. 5) 4 bus power flow study. Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
9	2A/22	Stepper Motor Trainer	Stepper motor Trainer should have the following features : - Built in Power Supply - DC Supply: 5V / 1A. & $\pm 12V$, 500mA. 0 to 15V DC (Variable), 100 mA (Isolated), 0 to 30V DC (Variable), 100 mA (Isolated), High Volt DC -15V to 110V, 100mA. - AC Supply: 12-0-12V AC, 150 mA. Short circuit Protected. - Built in Function Generator O/p Waveform : Sine, Triangle & TTL O	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			Output Frequency: 1 Hz to 1MHz in 6 ranges, with amplitude & frequency control pots. O/P Voltage 20Vp-p max. (Sin/TRG) • Clock Generator : 10 MHz TTL clock. • Data Switches (10 No.) & bi-colour LED status indicators 10X2 Nos, for High/Low indication. • Pulser switches (2 Nos.) with four debounced outputs - 2No. • Optional BNC to 2 channel banana adapter - 2No. • Logic probe to detect High/Low level pulses upto 1MHz, with bi-colour LEDs to indicate status. • 2 / 4 digit 7 segment display with BCD to 7 segment decoder. • Onboard DPMs mode/range selection. DC volt: 2V/200V DC current: 2mA/200mA DC Volts/Current : 20V/200mA • Onboard moving iron meters provided for AC Current: 1 AMP AC Voltage : 15V • Onboard speaker: 8 Ohms, 0.5 Watt (1No.) • Onboard POTS : 1K - 1No. 1M - 1No. • Operating Voltage: 220/240Vac switch settable $\pm 10\%$, 50Hz/72VA. Stepper Motor with digital controller Demonstrator Expt. Panel Control of direction, Step rate, Auto / Manual operation of stepper either built in 7.50 step or external 3 kg-cm motor (1.80) in half / full / wave stepping modes / current chopper mode. Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	

LOT: 12 – ELECTRICAL INDUSTRIAL TRAINERS

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1.	2A/2	Industrial Control Trainer	The Industrial Control Trainer should have following features : Technical specifications : Powder coated Sturdy aluminum Flat panel system / Screen printed polycarbonate panel with powder coated MS box, carrying various high voltage components. It should consist of: • 4 pole DC/AC MCB • Wiring panel • Power incomer terminal block • 24 VAC transformer • 24 VDC power supply panel • Circuit breakers panel • Isolating switch panel • Switch disconnecter • Busbar system • Contactor panel • Changeover contactor • Thermal-magnetic circuit breaker • Motor starter with Modbus port • PLC with Modbus port • Power meter with 3 CTs • Control boxes with buttons and indicators • Terminal block for connecting the boxes and limit switches • Limit switches (Sufficient Nos. to be provided) The learning objective behind this setup is to: 1. Study and create the various motor starter diagrams: • Separation or isolation • Control or switching • Short-circuit protection • Overload protection 2. Learn about the control gear and the different ways to set it up. 3. Create power switching equipment 4. Understand and design control schemes application specific sequences. Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price.	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
2	2A/4	House Wiring / Commercial Wiring Installation Trainer	The House Wiring / Commercial Wiring Installation Trainer should have following features : Technical specifications : Powder coated Sturdy aluminum Flat panel system / Screen printed polycarbonate panel with powder coated MS box, carrying various high voltage components. • Support frame • Circuit breaker module • 16 A circuit breaker module • 16 A/30 mA residual current CB module – 2 nos • Impulse relay module • Impulse relay module (central ctrl) • Prog. timer switch module • Modular contactor module • Two-way switch module - 2 nos • Pushbutton module – 6 nos • Double PB module • 16 A power socket module - 2 nos • 15 W lamp holder module – 5 nos The learning objective behind this setup is to: 1. To set up a distribution switchboard 2. To study and wire components in the 1 to 2-room housing kit: • 1-pole and 2-pole one-way switches, two-way switches, power socket • series/parallel connections • Wiring new technology combining the traditional wiring methods Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos.	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			B. Well written students workbook explaining experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
3	2A/5	Electrical Control Trainer	The Electrical Control Trainer should have following features: • A simulated Amplidyne control system can be constructed using Process and PC based software for monitoring & data acquisition. • Facility to monitor behavior of the output & process variable either on PC screen or on CRO. <u>Technical Specifications :</u> Basic Resources on Top board : a) Built in power supply b) Display Analog Meter – 2 Nos. i) Centre zero for display of process error (+9V) ii) For MV/SP (0-2.5V) c) Operating voltage Switch selectable 220-240Vac +10% 50Hz d) Computer Interface Adapter for monitoring e) Software P4 / XP / Parallel port based, data acquisition cum monitoring interface adaptor to study closed loop dynamics. <u>Experiment Panels:</u> a) Potentiometric error detection cum magnetic amplifier	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			interface panel Onboard Transformer – 2 Nos. I) P: 0-230Vac S1 : 0 - 24Vac, S2 : 0 - 6Vac II) P: 0-230Vac S1 : 24 - 0 - 24 b) Potentiometric error detector • 360° servo pots / 10K - 2Nos. • Facility to study error under AC supply as well as DC supply application. c) Diode Demodulator to convert AC error signal into DC error to control magnetic amplifier. d) Connector to interface with AC servo motor from AC servo position Control & Connector to interface with synchro command station. e) Variable control voltage for plotting Magnetic amplifier characteristics. 1. AC servo position Control • AC geared 2 phase servo motor • Sensor : 1 No. of Servo pot, Synchro Control Transformer. 2. Synchro Transmitter Receiver • Rotor 1 phase 115 Vac/120mA • Stator 3 Ph. 90VAC - Connector to interface with panel • Sensor: 1 No. servo pot 3. Magnetic Amplifier • Magnetic Amplifier 2 Nos. table top units with Bias & Error winding & Load winding and loading resistor. • Sensor: Loading resistor 10 ohm / 5W. Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price.. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig.	

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
4	2A/9	Power Transmission Line Trainer	The Transmission line Trainer should consist of following features : Technical Specifications of interfacing panels: Powder coated Sturdy aluminum Flat panel system carrying various high voltage components housed in plastic enclosures to minimize shock possibility. a) Input 3 phase DOL Starter panel • 4 pole MCB. • DOL Contactor • Bimetallic thermal O/L relay b) FWD-OFF-REV, Switch Panel FWD/REV, 3 pole 3 way switch with center OFF. c) 3 Phase Bidirectional Power cum Energy meter panel • Measurement of V, I, Hz, Pf, KVA, KW, KWH. • Modbus RTU RS 485 connections. d) VAR Compensation panel (dual panel) Should consist of VAR compensating capacitors of different values with switch for selection. e) Transmission line Panel – Table Top Panel • Simulated model for transmission line (250 kms) • Simulated model for medium/long length transmission line for Pi model. • Simulated model for medium/long length transmission line for T model • 2 transmission line panels supplied to simulate up to 500 kms length. f) RLC load panel – Table Top Panel • 3 nos of 600W resistors with switch for selection of values. • 3 nos. of inductor 1.5H/1A with switch for selection of values. • Capacitors 440VAC rating (3 nos, one per phase) with switch for selection of values. g) 3 phase dimmer/variator panel – Table Top Panel	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			The above trainer should cover following experiments: 1. Working with bi-directional 3 AC measurement panel, observing flow of real & reactive power & modbus communication with PC. 2. No load test & Ferranti effect. 3. Determination of transmission line constants (ABCD) by experimental measurement using 2-port method as well as by knowing components values and its verification. 4. Load Test & Calculation of Regulation, efficiency of Transmission Line by Laboratory measurement method. 5. Working with power circle diagram & to find steady state power limit of transmission line. 6. Capacitive VAR compensation 7. Per unit representation 8. Symmetrical & unsymmetrical faults in transmission line, LG fault with & without Petersen Coil. 9. Predicting Power Flow in Transmission Line (2 bus) by Numerical method [Newton Raphson / Gauss-Seidel Method] Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price.. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
5	2A/10	Electrical Power Generation set up	The Electrical Power Generation Trainer set should consist of the following features :	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			Technical Specifications of interfacing panel rack a) Input 3 phase DOL starter panel 4 pole MCB. - DOL Contactor. - Bimetallic thermal O/L relay b) FWD/REV, Star-Delta starter panel 3 pole 3 way switch with center OFF. c) Instrumentation Power supply cum Multichannel DPM panel d) SCR Actuator (variable DC) cum sensor signal conditioning panel - 3 Nos. - Full bridge SCR based cosine firing with linear characteristics. e) Rotor Resistance cum 3 phase Synchronous Motor Control Panel - Rotor resistors - 3 nos with selector switch - DC Rotor excitation over current relay f) DC voltmeter and DC ammeter panel - DC voltmeter - DC Ammeter with polarity protection diode - Field failure relay to control Armature supply. g) Integrated AC 3 phase measurement panel Digital meters to measure V, I, PF (0.2 lag – unity 0.2 lead), Hz. h) Table Top Panels, M/c's Key Resource Trunnion mounted DC integrated machine 300W coupled to 3 phase salient pole alternator, 300VA, 415VAC, 50Hz. i) Resistor Load Panel - AC Resistors - DC Resistors j) LC Load Panel List of Experiments : - Regulation of 3 phase alternator by : - Synchronous impedance method - ZPF or POTIER method - Actual load test - Determination of : - Direct axis and quadrate axis subtransient reactance X_d'' & X_q'' - Zero sequence reactance X_0. - Negative sequence reactance X_2. - Comparing experiment faults currents with calculated fault current using Z_0, Z_1, Z_2.	

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price.. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
6	2A/11	Biased Differential Relay Trainer	The Biased Differential Relay Trainer set should consist of the following features Relay testing kit typically consisting of voltage injector, current injector, elapsed time counter, trip relay logic etc • Differential relay • Suitable protection using MCB • Current injector • Ammeters • Timer • Start/stop push buttons • Indicators Following Essential accessories should be provided with trainer: A. 3 Phase variac 3 Amp B. Shrouded patch chord – 120 Nos. C. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. D. Demo CD to help student to work by themselves – 1 No. E. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
7	2A/14	Over / Under Voltage Relay	The Over / Under Voltage Relay Trainer should consist of the following features: • Over voltage/under voltage relay • Coil • Contacts • Indicators Following Essential accessories should be provided with trainer: A. 3 Phase 3 Amp. Variac. B. Shrouded patch chord – 120 Nos. C. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. D. Demo CD to help student to work by themselves – 1 No. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
8	2A/15	Inverse definite minimum time (IDMT) Over Current Relay Trainer	IDMT Over current relay trainer (Numerical) must consist of following features: • Overcurrent relay • AC ammeter • Timer • Start/stop push button • Dimmer • Suitable protection using MCB • Variable AC source • Connections brought on the plate for connections Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	2
9	2A/16	Over / Under Frequency Relay Trainer	Over/Under frequency Relay Trainer should consist of the following features: • Frequency relay • Coil • Frequency meter • Suitable system protection Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. D. Set of spare parts recommended for two years normal	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
10	2A/17	Power Factor Control Relay Trainer	Power Factor Control Relay Trainer should have features: Measurement of Power Factor at Resistive (R) Load, Resistive and Inductive (R-L) Load, Resistive and Capacitive (R-C) Load, Resistive, Inductive and Capacitive (R-L-C) Load • Equipped with inbuilt R, L and C load required for experiment • Microcontroller based Measurement unit with high accuracy and resolution • Designed by considering all the safety standards • Diagrammatic representation for the ease of connections Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
11	2A/19	Solar Technology Trainer	The Solar Technology Trainer should be designed to demonstrate the basics of energy production by solar panels. • Support frame • Solar panel • Measurement module with voltmeter and ammeter – 1 no. each • Charge regulator module equipped with 2 indicators • 12 V battery module • 12 VDC/230 VAC inverter module • 15 W lamp holder module The learning objective of this equipment is to: 1. To learn about and identify the components 2. To study, size and install solar panels 3. To study the effect of shading masks Following Essential accessories should be provided with trainer: A. Shrouded patch cord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	2
12	2A/20	Electro hydraulic Trainer	The Electro hydraulic trainer should consist of following features: Basic hydraulic components, hydraulic schematic drawings, circuits designing and hydraulic power pack • Single acting cylinder	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			• Double acting cylinder • Solenoid valve • Pressure relief valve • Pressure switches • Pressure gauge • Hydraulic power pack Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	
13	2A/21	Electro pneumatic Trainer	The Electro Pneumatic Training should consist of following features: • Pneumatic-electric interface • Pneumatic limit switch sensor with rollers • Electric limit switch sensor with rollers • Monostable solenoid valve • Bistable solenoid valve • Single-acting cylinder • Double-acting cylinder • Control station • Isolating valve + regulator • Double solenoid valve The learning objective of this equipment is to: 1) To study pneumatic and electro-pneumatic technologies 2) To set up and control pneumatic automation system functions. 3) To wire up electro-pneumatic components	2

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			Following Essential accessories should be provided with trainer: A. Shrouded patch chord – 120 Nos. B. Well written students workbook explaining at least 50 experiments with instructor guide. – 1 No. C. Demo CD to help student to work by themselves – 1 No. Set of spare parts recommended for two years normal operation. Please indicate the detailed list of spares in Technical bid without price. NOTE : Following documents are mandatory and are to be submitted along with Technical Bid : 1. Front & Back Panel drawing for detailed layout of Input / Output terminals, Power switches, Metering with schematics. 2. Circuit drawings of complete Test Rig. Work Table for one trainer: Work Table of dimension approximately 1200 – 1250 mm (L) x 600 – 650 mm (W), 890 - 910 mm (H) with powder coated suitable to mount above trainer to be supplied. Work table to be comprised of Table Top (18mm thickness) with smooth surface finish, MS tubular frame (16 gauge), 3 drawers and castor wheels with locking mechanism so that the table can be easily moved.	

LOT: 13 - ELECTRONIC TRAINERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2A/23	Oscilloscope - Digital	Digital Storage Oscilloscope. 30 MHz Digital Storage Oscilloscope with Bandwidth: 30MHz Channels: 2 Rise Time: <10ns Equivalent Sampling Rate: 20 GSa/s Memory Depth: 32Kpts Maximum Input Voltage: 400V peak Input Coupling: AC, DC, GND Triggering Modes : Auto/Normal/Single Triggering Types: Edge, Pulse Width, Slope, Video, Alternate Display: LCD Colour Power supply : 230 V +/- 10 % 50 Hz USB Support: Yes Instruction Manual: Should contain Information on features, operation and maintenance. Instructional manual having list of Experiments, brief introduction, circuits, apparatus used, procedure, tabulation etc. Well illustrated documents with clean figure, theoretical explanation to be provided. Log of experiments supported with observator tables for easy learning. Set of spare parts recommended for 2 years normal operation Please indicate the detailed list of spares in Technical bid without price.	2
2	2A/24	Function generator	Function Generator AM/FM Modulation: AM, FM Frequency Range: 1 Hz - 10 MHz Output Waveform: Sine, Square, Triangle, Ramp, Pulse Square Wave Rise & Fall time: < 60ns CMOS/TTL Output Rise & Fall time: < 30ns Display: LCD Output Impedence: approximately 50 ohms Output Voltage: approximately 20Vpp Instruction Manual: Should contain Information on features, operation and maintenance. Instructional manual having list of Experiments, brief introduction, circuits, apparatus used, procedure, tabulation etc. Well illustrated documents with clean figure, theoretical explanation to be provided. Log of experiments supported with observator tables for easy learning. Set of spare parts recommended for 2 years normal operation	1

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
3	2A/25	Discrete Component trainer	Discrete component Trainer: With built-in power supply to study basic semiconductor devices. Connections through Sturdy banana sockets and patch cords. Components: Resistors, Capacitors, Inductors, diodes, NPN & PNP Transistors, BJT, FET, MOSFET etc. Power Supply: 230 V $\pm$10 %, 50Hz Instruction Manual: Should contain Information on features, operation and maintenance. Instructional manual having list of Experiments, brief introduction, circuits, apparatus used, procedure, tabulation etc. Well illustrated documents with clean figure, theoretical explanation to be provided. Log of experiments supported with observator tables for easy learning. Set of spare parts recommended for 2 years normal operation 1) Mains cord: 1 no. 2) Learning Material: CD – 1 no.	1
4	2A/26	Linear I.C. Trainer	Linear I.C. Trainer To study basic semiconductor devices such as diodes, BJT, FET, JFET etc. and fundamental Components like R and C. On-board resources such as resistor, capacitor, diode On-board regulated variable power supply Power Supply: 230 V $\pm$10 %, 50Hz Set of spare parts recommended for 2 years normal operation: 1. Potentiometer: 2 nos. 2. Different types of Resistors, Capacitor, Transistor used as per trainer 3. All types of knobs 4. IC's: 1 set as per trainer	1
5	2A/27	Digital I.C. Trainer	DC regulated power supply of 5V. On board resources such as logic switches/inputs for providing inputs to digital ICs. Digital Circuits to be covered: minimum - basic logic gates, universal gates, flip-flops Connections: Easy interconnections between circuits Indicators: LCD/LED Power Supply: 230 V $\pm$10 %, 50Hz Set of spare parts recommended for 2 years normal operation: 1. Potentiometer: 2 nos. 2. Different types of Resistors, Capacitor, Transistor used as per trainer 3. All types of knobs 4. IC's: 1 set as per trainer	1
6	2A/123	Micro Processor Training kit	8085 / 8086 Microprocessor Training Kit <u>CPU operating @ 2,5/5,hz</u> To study 8085/8086 systems. CPU: 8085 / 8086 Microprocessor	3

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			Memory: On-board capacity of 64 Kbytes RAM: 8Kbytes ROM: 8Kbytes EPROM Display: LCD/LED Keyboard: Hexadecimal Interface: RS232 C Bus: All address, data & control lines Power Supply: 230V $\pm$ 10%, 50Hz Set of spare parts recommended for 2 years normal operation: - Potentiometer: 2 nos. - Different types of Resistors, Capacitor, Transistor used as per trainer - All types of knobs used - IC's: 1 set as per trainer	
7	2A/124	Digital Counter with all accessories	Digital Counter with all accessories to study the fundamental principle and functioning of Digital Counter. Technical specification: Frequency range: 0 to 1000 Mhz Time Range: 10s to 1ns Frequency display: LCD/LED Power supply: 220 V AC+/- 10% 50Hz Instruction Manual: Should contain Information on features, operation and maintenance. Instructional manual having list of Experiments, brief introduction, circuits, apparatus used, procedure, tabulation etc. Well illustrated documents with clean figure, theoretical explanation to be provided. Log of experiments supported with observator tables for easy learning. 2 sets of below mentioned Spare parts recommended for 2 years normal operation: - Main cord - 1 no - Learning material (CD): 1 no.	1

LOT: 14 - ELECTRICAL & ELECTRONIC PANELS & TRAINERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2A/33	E.L.C.B	E.L.C.B (Earth Leakage Circuit Breaker) Range: 5KVA Trainer Model with all the input output terminals are brought out on the panel for making external connections mounted on a panel Board with screen-printed notations on 6 mm thick insulated Polycarbonate sheet. The equipment to be housed in a wall mounted Box of Size 2 x 1.5 feet approximately. Specifications: Input auxiliary voltage : 230V, 440V VAC 50Hz Current Sensitivity range : Variable up to 12A. Tripping time : Variable: 0.15-3 sec Core balance : current-transformer type Relay contacts : One pair of potential free NO & NC Contact Rating : 3 Amps / 230VAC / 24 VDC	1
2	2A/34	R.C.C.B	R.C.C.B (Relay Current Circuit Breaker), Range: 5KVA Trainer Model with all the input output terminals are brought out on the panel for making external connections mounted on a panel Board with screen-printed notations on 6mm thick insulated Polycarbonate sheet. The equipment to be housed in a wall mounted Box of Size 2 x 1.5 feet approximately. Specifications: Input auxiliary voltage : 230V, 440V AC 50Hz Current Sensitivity range : Variable up to 10A Tripping time : Variable: 0 - 30 sec Relay contacts : One pair of potential free NO & NC contact	1
3	2A/35	M.C.C.B	M.C.C.B (Miniature Current Circuit Breaker) Range: 5KVA Trainer Model with all the input output terminals are brought out on the panel for making external connections mounted on a panel Board with screen-printed notations on 6mm thick insulated Polycarbonate sheet. The equipment to be housed in a wall mounted Box of Size 2 x 1.5 feet approximately.. Specifications: Input auxiliary voltage: 230V, 440V VAC 50Hz Current Sensitivity range: Variable up to 20A Tripping time Variable: 0 - 30sec Relay contacts: One pair of potential free NO & NC contact Contact Rating: 3 Amps / 230VAC/24 VDC	1

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
4	2A/111	Single phase preventer	SINGLE PHASE PREVENTER Single phase preventer trainer model for Protection of induction motors against single phasing or reverse phasing or unbalance supply is one of the major problems in electrical systems. Suitable for the protections of motors of any H.P. Individual trip indication for SPP, reverse phasing and indication for output relay ON. Auto reset type voltage hysteresis gap for tripping on under/over voltage. Technical Specifications: System Supply: 400VAC, Three phase +/- 10%, min 2.2 KW Output contact rating: 5 Amps at 220 V AC. Trip Time delay: 2-3 seconds. Reset Mode: Auto reset. Trip Indications: For SPP, reverse phasing and relay ON indication. The complete test kit is to be housed in a powder coated metal enclosure of size 2' x 2' rectangular box. The front panel to be made of 6mm thick insulated Polycarbonate sheet which should consist of MCB, ELCB, HRC fuses, indicating lamps and insulated terminals. Voltmeter and Ammeter are to be provided for measuring output voltage and current. The block diagram should be printed on the panel in screen printing.	1
5	2A/112	Earth Leakage Switch	EARTH LEAKAGE SWITCH: Trainer model with the following specifications: Auxiliary supply : 230/400V AC, 50Hz Built-in relay contact : 5 amps (resistive) 400V AC or 230 V DC Core balance C.T. : Toroidal core, bar primary Number of contacts : One N/O and One N/C. The complete test kit is to be housed in a powder coated metal enclosure of size 2' x 2' rectangular box. The front panel to be made of 6mm thick insulated Polycarbonate sheet which should consist of MCB, ELCB, HRC fuses, indicating lamps and insulated terminals. Voltmeter and Ammeter are to be provided for measuring output voltage and current. The block diagram should be printed on the panel in screen printing to show it's working.	1
6	2A/80	Contactor	3 phase, 440 volt, 16 amps 2 NO & 2 NC auxiliary contactor mounted on 2' x 2' (L x B) size or suitable size powder coated metallic box. The front panel to be made of 6 mm insulated industrial Polycarbonate board with terminals brought out on the panel to make external connections and the Circuit drawing to be screen printed on the panel.	1
7	2A/81	Contactor	3 phase, 440 volt, 32 amps 2 NO & 2 NC auxiliary contacts mounted on 2' x 2' (L x B) size or suitable size powder coated metallic box. The front panel to be made of 6 mm insulated industrial Polycarbonate board with terminals brought out on the panel to make external connections and the Circuit drawing to be screen printed on the panel.	1

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
8	2A/82	Limit Switch - Set	Limit switch Quick action with 2NC + 1NO, 2NO + 1NC, fitted on polycarbonate industrial panel insulated board of 6 mm thickness and <u>mounted on 2' x 2' (L x B) size or suitable size</u> powder coated metallic box with terminals brought out on the panel to make external connections. Circuit drawing to be screen printed on the panel. Limit switch Delayed action with 2NC + 1NO, 2NO + 1 NC, fitted on polycarbonate industrial panel insulated board of 6 mm thickness and mounted on 2' x 2' (L x B) size or suitable size powder coated metallic box with terminals brought out on the panel to make external connections. Circuit drawing to be screen printed on the panel.	1
9	2A/83	Rotary switch set	Rotary switch 16 A 500V 3 Pole fitted on polycarbonate industrial panel insulated board of 6 mm <u>thickness and 2' x 2' (L x B) size or suitable size</u> powder coated metallic box with terminals brought out on the panel with 16 Amps HRC fuse mounted on it to make external connections. Circuit drawing to be screen printed on the panel. Rotary switch 16 A 500V 4 Pole fitted on polycarbonate industrial panel insulated board of 6 mm <u>thickness and 2' x 2' (L x B) size or suitable size</u> powder coated metallic box with terminals brought out on the panel with 16 Amps HRC fuse mounted on it to make external connections. Circuit drawing to be screen printed on the panel.	1
10	2A/84	Knife switch	DPDT Knife Switch 16 Amps fitted on Polycarbonate industrial panel insulated board of 6 mm <u>thickness and mounted on 2' x 2' (L x B) size or suitable size</u> powder coated metallic box with terminals brought out on the panel with 16 Amps HRC fuse mounted on it to make external connections. Circuit drawing to be screen printed on the panel.	1
11	2A/85	Knife switch	TPDT Knife Switch 16 Amps fitted on polycarbonate industrial panel insulated board of 6 mm <u>thickness and 2' x 2' (L x B) size or suitable size</u> powder coated metallic box with terminals brought out on the panel with 16 Amps HRC fuse mounted on it to make external connections. Circuit drawing to be screen printed on the panel.	1
12	2A/100	Relays - set	Over current, leakage current (Earth leakage) relay with current injection kit 0-20A with time interval meter fitted on polycarbonate industrial panel insulated board of 6 mm thickness and <u>mounted on 2' x 2.5' (L x B) size or suitable size</u> powder coated metallic box with terminals brought out on the panel to make external connections. Circuit drawing to be screen printed on the panel. Under voltage, Over voltage with voltage injection kit 0-450v with time interval meter fitted on Polycarbonate industrial panel	1 Set

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
			insulated board of 6 mm thickness and mounted on 2' x 2.5' (L x B) size or suitable size powder coated metallic box with terminals brought out on the panel to make external connections. Circuit drawing to be screen printed on the panel.	
13	2A/101	Starters for 3 Phase, 400V, 50 cycles, A.C. motors - Set	Set consisting of following Direct on line starter for 3 Phase 400V 50 Hz 1.5 kW, with No Volt & overload protection fitted on polycarbonate industrial panel insulated board of 6 mm thickness and <u>mounted on 2' x 2' (L x B) size or suitable size powder</u> coated metallic box with terminals brought out on the panel to make external connections. Circuit drawing to be screen printed on the panel. Star delta starter for 3 Phase 400V 50 Hz 3.75 KW fitted on polycarbonate industrial panel insulated board of 6 mm thickness and <u>mounted on 2' x 2.5' (L x B) size or suitable size powder coated</u> metallic box with terminals brought out on the panel to make external connections. Circuit drawing to be screen printed on the panel. Auto transformer starter for 3 Phase 400V 50Hz 3.75 KW fitted on polycarbonate industrial panel insulated board of 6 mm thickness and mounted on 3' x 2' (L x B) size or suitable size powder coated metallic box with terminals brought out on the panel to make external connections and attached to auto transformer unit. Circuit drawing to be screen printed on the panel. Rotor Resistance starter for 3 Phase 400V 50 Hz 2.2 KW fitted on polycarbonate industrial panel insulated board of 6 mm thickness and <u>mounted on 2' x 2' (L x B) size or suitable size</u> powder coated metallic box with terminals brought out on the panel to make external connections and attached to rotor resistance unit. Circuit drawing to be screen printed on the panel. Soft starter AC drive VFD (Programmable) for Three phase input and Three phase output 3.75 KW fitted on polycarbonate industrial panel insulated board of 6 mm thickness and mounted on 3' x 2' (L x B) size or suitable size powder coated metallic box with terminals brought out on the panel to make external connections. Circuit drawing to be screen printed on the panel. Forward Reverse starter for 3 phase 400V 50Hz suitable for 1.5 KW with contactor NC inter lock fitted on polycarbonate industrial panel insulated board of 6 mm <u>thickness and mounted on 2' x 2' (L x B) size or suitable size</u> powder coated metallic box with terminals brought out on the panel to make external connections. Circuit drawing to be screen printed on the panel. One 5HP 1440rpm Squirrel cage induction motor and One 3 HP 1500 rpm Slip ring motor foot mounted with star/delta connections to be supplied for conducting experiments & working of all above starters.	1 each

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Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
14	2A/87	Inverter, sine wave	<u>Inverter, Sine Wave:</u> To study about conversion of DC into AC. - To understand the function of Inverter - Different blocks can be explained like charging of battery, DC to AC conversion. - To understand the charging of battery - To study the Inverter circuit - To study the different faults and there troubleshooting in Inverter circuit Output voltage: 230 V AC Battery: 12V DC Power: 1KVA Main Supply: 230 V $\pm 10\%$, 50Hz Instruction Manual: Should contain Information on features, operation and maintenance. Instructional manual having list of Experiments, brief introduction, circuits, apparatus used, procedure, tabulation etc. Well illustrated documents with clean figure, theoretical explanation to be provided. Log of experiments supported with observator tables for easy learning. Set of spare parts recommended for 2 years normal operation 1) Mains cord: 1 no. 2) Learning Material: CD – 1no.	2
15	2A/122	DTMF Telephone Trainer	<u>DTMF Telephone Trainer:</u> - To study working principle & various faults of DTMF Telephone Trainer - Study of the Working of Dialer Section & of DTMF Signals - Study of the Working of Ringer, Dialer section, Ringer volume control - To Study different faults & troubleshooting - Telephone instruments required for training to be provided. - Test Points to be provided Dialer : DTMF Power Supply: 230 V $\pm 10\%$, 50Hz Instruction Manual: Should contain Information on features, operation and maintenance. Instructional manual having list of Experiments, brief introduction, circuits, apparatus used, procedure, tabulation etc. Well illustrated documents with clean figure, theoretical explanation to be provided. Log of experiments supported with observator tables for easy learning. 2 sets of below mentioned Spare parts recommended for 2years normal operation: - Main cord - 1 no - Learning material (CD): 1 no.	1

LOT: 15 - ELECTRICAL METERS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.					
Sl. No	Ref: Enclosure	Item	Brief Specification	Make	Qty
1	2A/61	Analog multi Meter	Analog multi meter with pair of test leads, carrying case, battery, instruction manual and accessories fuse to measure AC - DC volts & currents, resistance, continuity testing with 9V power and measuring range 0 to 1000M ohms and testing voltage of 2.5 to 500 volts	ISI STANDARD	4
2	2A/29	Digital Multi meter	Digital multi meter with pair of test leads, carrying case, battery, instruction manual and spare fuse to measure AC - DC volts and currents, resistance, continuity testing, palm size with built-in tilt stand, 3½ digit – 1999 counts display with 9v battery power	ISI STANDARD	8
3	2A/62	A.C. Voltmeter, MI	Multi Range: 0-250- 500 V AC, MI with anti parallax mirror, Knife edge pointer, portable type	ISI STANDARD	2
4	2A/63	Milli Voltmeter centre zero	Portable milli voltmeter with centre zero 100 – 0 -100 millivolts, portable type with anti parallax mirror, Knife edge mirror	ISI STANDARD	2
5	2A/64	D.C Milli ammeter	Portable milli ammeter of range: 0 - 500 mA portable type with anti parallax mirror, Knife edge mirror	ISI STANDARD	2
6	2A/65	D.C. Ammeter MC	Portable Ammeter of Range: 0 – 1 A, MC, portable type with anti parallax mirror, Knife edge mirror	ISI STANDARD	2
7	2A/66	Ammeter MC	Portable, MC, Range: 0-5 A	ISI STANDARD	2
8	2A/67	Ammeter MC	Portable, MC, Range: 0-15-25 A	ISI STANDARD	2
9	2A/68	A.C. Ammeter MI	Portable , MI, Range 0-5 A	ISI STANDARD	2
10	2A/69	A.C. Ammeter MI	Portable, MI, Class-1, Multi Range 0-15-25 A	ISI STANDARD	2
11	2A/70	K.W. Meter	Portable watt meter dynamo motor type of multi range 0-1-3 KW, 2.5/5A with anti parallax mirror and knife edge pointer.	ISI STANDARD	2
12	2A/71	A.C. Energy Meter	Induction type, Single phase, 230 V, 50 Hz, 5A panel mounting type.	ISI STANDARD	2
13	2A/72	Single Phase power factor meter	Portable Digital power factor of 0.5 lag to 0.5 lead, 0-110- 230 Volts, current of 1-5 Amps	ISI STANDARD	2
14	2A/73	Frequency Meter	Digital frequency meter with main frequency range of 30 Hz to 70 Hz & 0.01 resolution, 180 - 230V AC power supply.	ISI STANDARD	2
15	2A/98	Flux meter	Digital flux meter : To measure DC Magnetic fields, voltage integration, ferro magnetic detectors, EMF Tester.	ISI STANDARD	2

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.

Sl. No	Ref: Enclosure	Item	Brief Specification	Make	Qty
			Specification: Input Power : 240 V, 50 Hz, 25VA. Input Resistance : 10 Kilo Ohms Output Resistance : 1 Kilo Ohms Output Voltage: 1 Kilomaxwell turns Display: 3½ digit LED/LCD		
16	2A/99	Lux meter	Lux meter with 3 1/2 digits LCD display, maximum reading value display 1999, 0-50000 Lux range, 1Lux resolution.	ISI STANDARD	2
17	2A/114	Clamp on Ammeter	Digital Clamp meter with accessories like test leads, carrying case, manual. etc. with 3 1/2 digits 2000 counts display to measure AC current up to 600A, AC Voltage, DC voltage, resistance, diode test..etc	ISI STANDARD	2
18	2A/77	Tong tester/ Clamp meter	0 - 5 -10 Amps, provision to measure voltage of 0 -250 - 500 volts digital type	ISI STANDARD	2
19	2A/30	Megger set	One each Generator type Megger set of range 500 Volts & 1000Volts	ISI STANDARD	2
20	2A/78	Wheat stone bridge	Wheat Stone Bridge Provided with DC power supply and Galvanometer Technical Specifications: DC Power Supply : 5V Resistance : 80 Ohm Type : Variable Range : 0 – 10 KOhm	ISI STANDARD	2
21	2A/86	DC power supply	<u>DC power supply</u> Good Regulation and Low Ripple Technical Specification: Output: 0-100V, 5A. Protection: Short and Over load Indication: Digital Meter for Voltage and Current Indication. Power Supply: 230 V ±10 %, 50Hz Set of spare parts recommended for 2 years normal operation: - Potentiometer: 2 nos. - Different types of Resistors, Capacitor, Transistor used as per trainer - All types of knobs used - IC's: 1 set as per trainer	ISI STANDARD	2
22	2A/88	Servo Voltage Stabilizer	SERVO VOLTAGE STABILIZER Demonstration model showing the working principle of Servo stabilizer with Servo motor and voltage corrector Specifications; Input Voltage Range: 150V to 230 V AC.,	ISI STANDARD	2

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.

Sl. No	Ref: Enclosure	Item	Brief Specification	Make	Qty
			Single-phase Output Voltage: 230VAC. Nominal, Internally Settable to 220V to 240V. Output Voltage Indication: By Digital Voltmeter Electronic under/over voltage Protection Upper Limit: 230V AC Lower Limit: 150V AC Over Load Indication: By LED Rating: 1 KVA.		
23	2A/109	Auto transformer	Auto transformer three phase 3.5 kW 400V	ISI STANDARD	1
24	2A/117	Earth Resistance Tester	DIGITAL EARTH RESISTANCE TESTER Earth Resistance: 0-2000 Ω Earth Voltage: 0-200V Display: Digital display	ISI STANDARD	2
25	2A/89	Rheostat set	Single Phase Tubular type rheostats of following ranges : a. 0-1 Ohm, 5 Amp, b. 0-10 Ohm, 5 Amp, c. 0-25 Ohm, 1 Amp, d. 0-300 Ohm, 1 Amp, e. 0 - 1000 Ohm, 0.5 Amp (one Set consisting of One each above)	ISI STANDARD	3
26	2A/31	Battery Charger	Battery Charger	ISI STANDARD Reputed Make	2
27	2A/131	Motor Winding Set	Armature winding of FHP AC motor set for motor winding practice. The set should contain the following: • Shaft • Insulating paper • Bearings with assembly manual • Rotor • Copper coil • Body	ISI STANDARD	1 Set
			Armature winding of FHP DC motor set for motor winding practice. The set should contain the following: • Brush holder • Shaft • Insulating paper • Commutator • Bearings with assembly manual • Carbon brush • Rotor • Copper coil • Body	ISI STANDARD	
28	2A/75	Current transformer	20/5 Amps, 10/1 Amps Wound Primary Type or Bar Primary Type	ISI STANDARD	2

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.					
Sl. No	Ref: Enclosure	Item	Brief Specification	Make	Qty
29	2A/76	Potential Transformer	One Set consisting of 1000/500V & 500/200V Potential Transformers	ISI STANDARD	2
30	2A/126	Mini drill machine for P.C.B's	A compact tabletop High speed Mini drill machine for P.C.B's with complete accessories and with power supply. Features: • Rugged and sturdy construction • Longer operational life • Optimum performance • Minimum power consumption Drilling Size: 0.5-3 mm Table size: Minimum 220x120 mm Bed Type: Regular PCB Drilling Bed Operating Voltage: 12V DC		1
31	2A/120	Stabilized low voltage power supply	DC Regulated Power Supply Dual Output -50v to +50v regulated adjustable DC output with voltmeter & Ammeter, 3v, 6v , 12v separate AC outputs 1. Output Adjustable from 0 to -50V DC, 3A 2. Output Adjustable from 0 to +50V DC, 5A 3. AC output for (i) 3V @3A (ii) 6V @3A (iii) 12V @3A		1
32	2A/121	High Voltage Probe with meter	High Voltage Probe with meter used to measure high voltages in TV sets, power supplies, laboratories and for general high voltage commercial applications. Maximum Measuring Voltage: 35kV / 40kV Type: Digital		1
33	2A/119	Radio Receiver AM & FM with FM Stereo	Output power 5W +5W rms, Operating Voltage 230V AC & DC 9V (all Transistorized or Section wise IC's)		1
34	2A/125	Alignment tool kit	For Radio Aligning		1

LOT: 16 - ELECTRICAL APPLIANCES

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1.	2A/28	Ceiling Fan	AC 230 V, 1200 mm blades	1
2.	2A/90	Electric Hot plate	1500W, 230V with temp control	1
3.	2A/91	Electrical Kettle	Electrical Kettle Cordless with 360 degree rotational base and a capacity of 1.7 litres Stainless steel body, Concealed stainless steel heating element, Water level gauge, Auto off on boiling, On/Off switch with light indicator, 1000 Watts 230V power	1
4.	2A/92	Electric Iron box	Automatic Iron box with minimum 1200 Watts, 230V, Variable steam control, and auto shut off and temp control.	1
5.	2A/93	Immersion heater	Immersion heating coil set consisting of 1000W, 230V	1
6.	2A/94	Geyser	Geyser of minimum 25 litres capacity – 230 V (Storage type)	1
7.	2A/95	Induction stove	Electric Induction stove of minimum 120 W to 2000W 8 bands adjustable power, Digital display to show time, power & temp, Minimum temperature of 70 to 270 deg, 8 bands adjustable, with Multi function & timer.	1
8.	2A/96	Microwave Oven	Micro Oven of minimum 30 Litres capacity convection type.	1
9.	2A/97	Electric Cooker	Automatic Electric Rice Cooker 1.8 Litre Capacity (Raw Rice) 700 Watts, 230 V, Single phase, AC Electric supply, Teflon coated cooking pan Cooking indicator, Detachable power cord Auto shut off	1
10.	2A/115	Domestic water pump with starter	Water Pump Single Stage, Self-priming type, with Manganese / Bronze impellers. Steel shafts and close grained Cast Iron parts. Capacity of 1 HP	1
11.	2A/116	Electric Toaster	Auto Pop Electric Toaster, 2 Slice capacity, 250 Watts, 230 V, Single phase, AC Electric supply, Auto pop up, Cool touch body Variable browning control, Cord storage, 250 W Heating Element & Heating adjustment	1
12.	2A/118	Wall Fan	Wall fan of 18" dia sweep blade size	1

LOT: 17 – FURNITURE – ELECTRICAL

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2A/113	Booths for domestic wiring	9ft x 4ft x 4ft with fine wood / silver oak / rubber wood 50mm thick fitted on Slotted angle 18G 2”x2”	2

LOT – 18 TOOLS FOR COMMON FACILITY WORKSHOP

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/1	Set spanners combination 6 – 24mm	6-24mm combination set	3
2	1/2	Set socket and spanners 10 – 32mm	10-32mm 1/2 socket set	3
3	1/3	Set Of Allen Keys 18 piece Hex & Torx Star	18 piece Hex & Torx Star	3
4	1/4	Ball pin hammer 300g	Ball pin hammer 300g	15
5	1/5	Screw driver set 18 piece	set 18 piece 9 flat and 9 Philips	3
6	1/6	Screw driver set	double end	8
7	1/7	Trimming Knife	Retractical blade with steel housing	3
8	1/8	Scribers 100 – 150mm	100mm long straight to 90< bend	15
9	1/9	Square 150 mm	150mm long	15
10	1/10	Tin snips	3 Piece Set with straight, curve(left and Right)	2
11	1/11	Divider 150mm	150mm long	15
12	1/12	Inside and Outside callipers	150mm long	3
13	1/13	Jenny callipers	150mm long	3
14	1/14	Steel Ruler 150mm	steel 150mm long	15
15	1/15	Set pin punches – parallel (2.5mm – 8mm)	2.5mm-8mm set pin punch 100mm long	3
16	1/16	Cir-clip Pliers internal 200mm	200mm long	3
17	1/17	Cir-clip Pliers external 200mm	200mm long	3
18	1/18	Pliers combination insulated 200mm	200mm long	3
19	1/19	File Brush	230mm long	15
20	1/20	De-Burring Tool	150mm long with 5 different blades	15
21	1/21	Square 100 mm	100mm long engineering square	15
22	1/22	Scriber	200mm long with straight to 90. Bent	15
23	1/23	Prick punch	5 Piece HSS 50-150mm	15
24	1/24	Chisel	16mm flat x 150mm long	15
25	1/25	Paint Brush	25mm wide	15
26	1/33	M6 Tap set	M6 set with 1st,2nd and 3rd cut and taper point	15
27	1/34	M8Tap set	M8 set with 1st,2nd and 3rd cut and taper point	15
28	1/35	M10 Tap set	M10 set with 1st,2nd and 3rd cut and taper point	15
29	1/36	Chuck Spanner	100mm long	15
30	1/37	Shaving Hook	300mm Long round	15

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.

Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
31	1/42	Running Centre	Running Centre with no 2 shank	8
32	1/43	Thread Set gauge	60' and 55' Inch & Metric	8
33	1/44	Thread pitch gauge	55' & 60° Inch & Metric	8
34	1/45	Allen key 8mm	8mm straight end	8
35	1/47	Tool holders min off 3 Boring bar	10mm & 16mm and 20mm	15
36	1/49	Scriber	200mm long straight to 90' bend	8
37	1/50	Drift	drift 2-5 shank size	8
38	1/51	Drill 32mm	32mm with no2 shank	15
39	1/52	Drill 28mm	28mm with no2 shank	15
40	1/53	Drill 25mm	25mm with no2 shank	15
41	1/54	Drill 16mm	16mm with no2 shank	15
42	1/55	Copper Hammer	25MM long flat sides	15
43	1/56	Knife cutting tool	1.5mm radius	15
44	1/57	Smooth/finishing cutting tool	0.5mm radius	15
45	1/59	Knurling tool	Diagonal 2-5mm three sided	15
46	1/63	Torque wrench 65 – 335Nm	65-335Nm torque wrench	3
47	1/64	C-spanner set	C-spanner set C1-6	3
48	1/65	Bearing puller set 75mm	bearing puller 3 legs hydraulic manual	3
49	1/66	Rubber mallet	672g flat ended	8
50	1/67	Wheel dresser	grinding wheel, grinding dresser no2	3
51	1/131	Illuminated magnifiers		5
52	1/132	Sine bar	200 mm	5
53	1/133	Precession level, flat type	Sensitivity 0.02/200 mm	5
54	1/134	Morse Taper gauge - Set of Plug and ring type	MT1, MT2, MT3, MT4	5
55	1/135	Magnetic V- block	Assorted	5
56	1/136	Bevel Protractor	300mm	5
57	1/137	Parallel blocks- hardened	Set of assorted sizes	5
58	1/138	Engineer Try Square	Assorted sizes	5
59	1/139	Bevelled Edge	Blade length-100mm	2
60	1/140	Straight edge	Blade length-1000mm	2
61	1/141	Steel Rulers	300/600 mm	16
62	1/144	Letter punch	Set of 3mm& 6mm	5
63	1/145	Number punch	Set of 3mm& 6mm	5
64	1/146	Tap wrenches	Assorted sizes	5
65	1/147	Flat scrapers	20mm width	5
66	1/148	Triangular scrapers	200mm long	5
67	1/149	Hand vice	150mm jaw	8
68	1/150	Centre punch	100 mm	15
69	1/151	Set of Hammers	Nylon/Ballpeen/cross peen	15

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
70	1/152	Hack Saw Frame Tubular	300mm, Tubular, with 20 blades	15
71	1/153	Electric Drill Gun	13mm capacity	5
72	1/154	Drill chucks	13mm capacity	5
73	1/155	Oil stones	Medium grit, 150x50x25mm	5
74	1/164	Chisel	Cold Flat 18x150	15
75	1/165	Chisel	Cross Cut 10x3x200	15
76	1/166	Chisel	Half round 10 x 250 mm	15
77	1/167	Chisel	Diamond point 10 x 200 mm	15
78	1/168	Set of files	Flat bastard 350mm	30
			Flat second cut 250 mm	
			Triangular smooth 250 mm	
			Needle file set 150 mm	
79	1/169	File card		15
80	1/170	Safety goggles		30
81	1/171	Set of callipers and Dividers	Spring/firm joint/jenny/wing compass	15
82	1/126	Feeler Guage	0.05-1mm range with se of 20 blades	5
83	1/128	Plug gauge-set	Inch and Metric Assorted sizes	5
84	1/48	Surface gauge	6-Inch thick	8

LOT – 19 DRILL BITS & OTHER TOOLS FOR COMMON FACILITY WORKSHOP

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/26	12mm Drill	12mm with straight shank	15
2	1/27	10mm Drill	10mm with straight shank	15
3	1/28	8.5mm Drill	8.5mm with straight shank	15
4	1/29	8mm Drill	8mm with straight shank	15
5	1/30	6.8mm Drill	6.8mm with straight shank	15
6	1/31	6mm Drill	6mm with straight shank	15
7	1/32	5mm Drill	5mm with straight shank	15
8	1/58	Parting tool	2.5mm thick blade with holder	15
9	1/60	Thread cutting tool	v-threads, acme threads and square threads up to 3mm pitch	15
10	1/61	Set of boring bars	10mm, 16mm and 20mm	15

LOT – 20 CONSUMABLES FOR COMMON FACILITY WORKSHOP

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	1/172	Safety lockout/tag out system		30
2	1/173	Safety boots (Pair)		30
3	1/174	Safety gloves (Pair)		30
4	1/175	Personal Protective clothing (Suit)		30
5	1/176	Safety Goggles/Face shield		30
6	1/177	Hairnet		30
7	1/178	Ear protection		30
8	1/179	Marking blue	350ml marking blue spray	10
9	1/180	Tapping paste	500g tub	10
10	1/181	Shim stock (0.01-1mm)	0.05, 0.1, 0.2, 0.25, 0.3, 0.4, 0.45, 0.5, 0.55, 0.6, 0.7, 0.75, 0.8, 0.9, 1mm set of shims	3
11	1/182	Drill bits (4mm – 10mm)	4, 4.8, 5, 5.5, 5.8, 6, 6.5, 6.8, 7, 7.5, 7.8, 8, 8.5, 8.7, 9, 9.5, 10mm straight shank drill	8
12	1/183	Set of taps (M6, M8, M10)	M6 set 1st, 2nd and 3rd cut with taper point, M8 set 1st, 2nd and 3rd cut with taper point, M10 set 1st, 2nd and 3rd cut with taper point,	5

LOT – 21 TOOLS FOR MILLWRIGHT

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	2A/133	Set spanners combination 6 – 24mm	6-24mm combination set round to open mouth	3
2	2A/134	Set socket and spanners 10 – 32mm	10-32mm 1/2'	3
3	2A/135	Set Of Allen Keys	metric and imperial 100mm long	3
4	2A/136	Ball pin hammer 200g	200g flat and round head	4
5	2A/137	Ball pin hammer 500g	500g flat and round head	4
6	2A/138	Prick punch	100mm long	8
7	2A/139	Cold chisel 20mm X 200mm	20mm with X 200mm long	8
8	2A/140	Screw driver set 18 piece	9 flat and 9 philips with insulated handles	8
9	2A/141	Square 150 mm	150mm	8
10	2A/142	V-blocks	1-5/8" x 1-1/4" x 1-1/4"	8
11	2A/143	Tin snips	Combination set	8
12	2A/147	File Bastard 300mm	300mm long flat with handle	8
13	2A/148	File second cut 300mm with handle	300mm long flat with handle	8
14	2A/149	File Smooth 300mm with handle	300mm long flat with handle	8
15	2A/150	File Round 300mm with handle	300mm long round with handle	8
16	2A/144	File Half round 300 mm with handle	300mm long half round with handle	8
17	2A/145	File Three-square 300 mm with handle	300mm long Three-square with handle	8
18	2A/146	File Square 300 mm with handle	300mm long square with handle	8
19	2A/151	File Flat 150 mm	150mm long smooth with handle	8
20	2A/152	Tap handle 150mm	150mm long 4-12mm tap capacity	8
21	2A/154	Hack saw	300 mm long	8
22	2A/155	Magnifying glass	90mm Diameter Lens	2
23	2A/156	Hand grinding machine	115mm 4 – 1/2 inch 1010W 115mm disk	2
24	2A/157	Hand baby grinder	670w 115mm disk	2
25	2A/158	File Brush	230mm long	5
26	2A/159	Paint Brush 25mm	25mm wide	5
27	2A/160	Steel Ruler 300mm	300mm long accuracy 0.5mm	8
28	2A/161	Radius Gauges	15mm-25mm radius gauge	2
29	2A/181	Protractor (Engineer)	180° steel	8
30	2A/162	Torque wrench	65-335Nm torque wrench	2
31	2A/163	C-spanner	C-spanner set C1-6	2
32	2A/41	Bearing puller	3 leg 12" dia	2

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.

Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
33	2A/164	Copper hammer	25MM flat end	8
34	2A/165	Number stamps 4mm	4mm thick	2
35	2A/166	Letter stamps 4mm	4mm thick	2
36	2A/167	Wheel dresser	grinding wheel, grinding dresser no2	1
37	2A/178	Belt tension gauge	Belt tension gauge kgf and mm	3
38	2A/180	Straight edge	1meter x 3 mm thick	8
39	2A/182	Marking off table or surface plate with angle plate	1.2mL x 1.1mW x 980mmh	1
40	2A/194	Marking Pens	permanent marker	16
41	2A/195	Marking blue	350ml marking blue spary	10
42	2A/196	Tapping paste	500g tub	10
43	2A/177	Combination Square set	300mm long steel	3

LOT – 22 TOOLS FOR BOILERMAKER

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. #	Ref: Enclosure	Description	Brief Specification	Qty
1	3/1	Ruler 1 m	1 m	15
2	3/2	Mason square	1m	15
3	3/3	Square 300 × 200 mm	Product Name : Try Square Ruler; Scale : Metric 150 x 300 mm	15
4	3/4	Combination square 300 mm	Square Combination 300mm	15
5	3/5	Trim knife	Retractable Trimming Knife + 3 Blades	15
6	3/6	G Clamp 100 mm	100 mm G-Clamps	15
7	3/7	Centre punch	5 x 120mm Centre Punch	15
8	3/8	Bevel square	BEVEL,SLIDING, ALUMINIUM, 200MM	15
9	3/9	Folding ruler 600 mm / Line of Chords	Steel Line Of Chords Rule 600MM	15
10	3/10	Scriber	SCRIBER, 170MM	15
11	3/12	Spring divider 150 mm – 350 mm	DIVIDER SPRING DIVIDER 150 mm – 350 mm	15
12	3/13	Hammer 2 pounds/900g	HAMMER, BALLPEIN, RUBBER HANDLE, ,900G	15
13	3/14	Trammel points		15
14	3/15	Chalk	pack of 144	15
15	3/16	Pipe centre finder		15
16	3/17	Fuller		15
17	3/18	Chalk Line	Stanley Chalk Line Reel Set ABS 30m	15
18	3/19	Chalk Divider		15
19	3/20	Tin Snips	9 Piece Set	15
20	3/24	Compass	Compass set	15
21	3/25	Measuring tape 5 m	Tape Rule (5m x 19mm)	15
22	3/26	Protractor 360	Helix Protractor 360 Degrees - 15cm	15
23	3/27	Flexi curve	(60cm) Flexible Curve	15
24	3/44	Marking off table	1.2 LX1.2 BX1.1HX10 MM	1
25	3/46	Chain block 2 ton	2 ton	2
26	3/47	Coffin block 2 ton	2 ton	2
27	3/48	Shackles 2 ton	2 ton	2
28	3/49	Chain slings 2.5 ton	2.5 ton	2
29	3/50	Wire ropes (20mm diameter)	6x19 (12/6+6F/1) Filler - IWRC Wire Rope	2
30	3/51	Tirfors 2 ton	2 ton	1

LOT: 23 – SET OF TOOL HOLDERS FOR CNC MACHINES

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.		
Set of Tool Holders for CNC Machines		
Ref: Enclosure - 1/161		Qty- 1 lot
Sl. No	Item	Qty
1	RD 16-BT40 Collet Chuck Holder with retention knob	4
2	RD 25-BT40 Collet Chuck Holder with retention knob	4
3	BT 40 Drilling Chuck Holder with retention knob	4
4	RD 25 Collets (14 Nos)	1 set
5	RD 16 Collets (10 Nos)	1 set
6	Tap collets RD 16	1 set
7	Tap collets RD 25	1
8	Key less Drill Chuck	1
9	BT40 Shell End Mill Adaptor	1
10	BT40 Side Lock Holder dia 8.0 mm with retention knob	1
11	BT40 Side Lock Holder dia 10.0 mm with retention knob	1

LOT: 24 – MECHANICAL PRESS 10 TONS CAPACITY

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.		
Ref: Enclosure - 1/95		Qty:1
Sl. No	Brief Specification	
1	Supply and E&C of Mechanical Press of Capacity 10Tons with all standard and required accessories and Electrical suitable for 380/400V, 3 Phase, 50Hz AC Supply.	
1.1	Description: Mechanical Press of rigidly built C type fabricated from high quality stress relieved Steel plates, non-inclinable, forged alloy carbon steel or EN material crank shaft fitted with clutch and brake assembly, Manual slide adjustment, suitable lubrication system and over load protection and suitable control panel.	
	Major specifications	
1.2.1	Strokes per Minute	75 nos.
1.2.2	Stroke Length	50 mm
1.2.3	Shut Height	200 mm
1.2.4	Bolster Size	540 x 315 mm
1.2.5	Bolster Thickness	65 mm
1.2.6	Height of Bolster surface from floor	800 mm
	Main Motor Power.	1.5HP
1.3	Accessories	
1.3.1	Starter of L&T/Siemens(fitted with machine)	1 no.
1.3.2	V Belts(fitted with machine)	2 nos.
1.3.3	Overload safety device (Mechanical Shear Plate) (fitted with machine)	1 no.
1.3.4	Manual Slide Adjustment(fitted with machine)	1 no.
1.3.5	Hand Operated Lubrication System(fitted with machine)	1 no.
1.3.6	Suitable Cutting Die and clamps for the above power press	1 no.
1.3.7	Suitable Punching Die and clamps for the above power press	1 no.
1.3.8	Operation, Maintenance and spare parts manual	3 Sets per machine
1.4	Colour: Dual Colour - Soft Grey (RAL-7035) and Himmel Blue (RAL-5015) Polyurethane Paint.	
1.5	Set of mechanical and electrical spare parts for 2 years normal operation. Please indicate the detailed list of spares in Technical bid without price.	
1.6.1	Touch up paint - 1 litre each, Brush- ½” – 2 nos., Cora cloth - 2 meters, Cotton waste - 1 kg.	
1.6.2	Initial fill of Hydraulic Oil & Lubrication Oil packed in separate containers & sealed	
1.6.3	Mounting bolts/Leveling plates	

LOT: 25 – MILLWRIGHT LAB EQUIPMENT

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.				
Sl. No	Ref: Enclosure	Item	Brief Specification	Qty
1	2A/185	Key fitting apparatus	Shaft Mounted on Sturdy Metal Frame to demonstrate different types of Keys. 1. Rectangular sunk key 2. Square sunk key 3. Parallel sunk key 4. Gib head key 5. Feather key 6. Woodruff key	2
2	2A/186	V-belt apparatus with double v-belts	Mounted on Sturdy Metal Frame to demonstrate V belt drive mechanism. Side Adjusting Screws to be mounted on metallic frame. Shaft Size: Ø 50 mm Belt Type: V Belt Big pulley: approx. Ø 550 mm Small pulley: approx. Ø 200 mm	2
3	2A/187	Chain drive apparatus with chain tensioner	Mounted on Sturdy Metal Frame to demonstrate V Chain drive mechanism. Side Adjusting Screws to be mounted on metallic frame. Driver : Double Sprocket Driven : Double Sprocket Jockey : Double	2
4	2A/189	Thruster brake with drum	Mounted on Sturdy Metal Frame to demonstrate Thruster brake with drum	2
5	2A/190	Spherical bearing with shaft	Shaft Mounted on a Sturdy Metal Frame to demonstrate Spherical Bearing	2
6	2A/188	Dial test apparatus with dial gauges (0.01mm increments)		2
7	2A/191	Ball bearing with shaft	Shafts Mounted on a Sturdy Metal Frame to demonstrate Bearings 1. Ball Bearing 2. Roller Bearing 3. Needle Bearing 4. Cylinder Bearing 5. Taper Bearing 6. Thrust Ball Bearing	2
8	2A/192	Bearing heater		2
Drawings of millwright lab equipment (SI NO: 1-7) has to be submitted along with technical bid.				

LOT - 26 REFRIGERATION & AIR CONDITIONING TRAINER EQUIPMENT

LOT-26(1) : VRF VRV UNIT TWO INDOOR UNITS

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/1			
Sl. No.	Item	Brief Specification	Quantity
1	VRF VRV unit two indoor Units: -To understand theory, constructional and operational features of VRF VRV refrigeration suitable for 1-Phase, 220- 240 V, 50 Hz AC supply. (MCB's to be used in place of fuses)		1 No
	Major Specifications:		
1.1	2.5TR each and 5TR Capacity outdoor unit complete with air cooled condenser, accessories and control.		
2	Purpose:		
2.1	Identify components of an VRF VRV refrigeration unit		
2.2	State need for eco-friendly refrigerant gas		
2.3	Study of a refrigeration cycle		
3	Requirements:		
3.1	Hermetically sealed Compressor, Reputed Make		
3.3	Temperature Indicator with sensor		
3.4	Pressure Gauges		
3.5	Energy Meter		
3.6	Voltmeter: Voltage Range:0-500V AC or DC,		
3.7	Ammeter: Measurement Line current of 3 phase (RYB) Current range Ct input Primary 5A to 1000A or higher		
3.8	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.9	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
3.10	Schematic diagram: To be enclosed in Manuals		
4	Colour	Standard Colour	
5	Operating manual containing Basic theory, Procedure to conduct experiment and troubleshoot.		3 sets
6	Recommended spares for 2 years of normal operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, brush etc. – Required qty.	1 set

LOT-26(2) : WALK-IN COOLER TRAINER

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/2			
Sl. No.	Item	Brief Specification	Qty.
2	Walk-in Cooler Trainer: The trainer is designed to understand theory, constructional and operational features of refrigeration and to study its performance characteristics suitable for 1-Phase, 220- 240 V, 50 Hz AC supply. (MCB's to be used in place of fuses).		1 No.
1	Major specifications		
1.1	Capacity	1500 Kcal/hr	
1.2	Chamber Size	48" (H) X 36 " (W) X 36" (D)	

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/2			
1.3	Doors	Heavy duty PUF Insulated Projected door installed with Hinges and Lock.	
1.4	Chamber Construction	Made up of PUFF panel with 3" thick insulation	
1.5	Refrigerant suitable for	R134A	
1.6	Bulkhead	Bulkhead light with switch	
1.7	Room Construction	The room should be equipped with heater	
2	Purpose		
2.1	To identify components of a Walk-in Cooler unit		
2.2	To study of a typical refrigeration cycle		
2.3	To calculate COP at various loads		
3	Required Components in the System		
3.1	Compressor: Hermetically sealed; Reputed make		
3.2	Expansion device: Capillary		
3.3	Control chamber: Size: 48" (H) X 36"(W) X 36" (D), made of GI Puff panel Sheet with 3" thick insulation This chamber has doors for accessibility. Outside material GI, Inside material: GI with Antiskid Aluminium floor		
3.4	Rotameter to measure refrigerant flow		
3.5	Evaporator		
3.6	Electrical Heater to load the system:0.5kW.		
3.7	Temperature Indicator (8 point) with Pt100 sensors.		6nos
3.8	Pressure gauges - Panel mounted, back connection type of Reputed make		2 nos.
3.9	H.P. / L.P cut out arrangement		
3.10	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.11	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
3.12	Schematic diagram: To be enclosed in Manuals.		
4	Operating manuals containing Basic theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(3) : VAPOUR ABSORPTION REFRIGERTAION TRAINER

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/3			
Sl. No.	Item	Brief Specification	Quantity
3	Vapour Absorption Refrigertaion Trainer: -To understand theory, constructional and operational features of vapor absorption refrigeration and to study its performance characteristics suitable for 1-Phase, 220- 240 V, 50 Hz AC supply. (MCB's to be used in place of fuses)		1 No
	Major Specifications:		
1.1	Rated power	70 w- 0.75KWB/24 Hours	
1.2	Temperature range	4 to 60c	

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/3			
2	Purpose:		
2.1	Identify components of an Absorption refrigeration System		
2.2	Study of a typical refrigeration cycle		
2.3	study its performance characteristics		
2.4	Calculate COP		
3	Requirements:		
3.1	Thermostat digital type 1 No		
3.2	Amp meter digital type 1 No.		
3.3	Energy meter digital type 1 No.		
3.4	Voltmeter digital type 1 No.		
3.5	MCB 2 poll as a main switch.		
3.6	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.7	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
3.8	Schematic diagram: To be enclosed in Manuals		
4	Colour	Standard Colour	
5	Operating manual containing Basic theory, Procedure to conduct experiment and troubleshoot.		3 sets
6	Recommended spares for 2 years of normal operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, brush etc. – Required qty.	1 set

LOT-26(4) : HEAT EXCHANGER (SHELL AND TUBE TYPE)

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/5			
Sl. No.	Item	Brief Specification	Qty.
4	Heat Exchanger: The trainer is designed to understand theory, constructional and operational features of different types of heat exchangersuitable for 1-Phase, 220-240 V, 50 Hz AC supply. (MCB's to be used in place of fuses).		1 No.
1	Major specifications		
1.1	Type	Shell and Tube Type Heat exchanger	
1.3	Flow Arrangement	Hot and cold water arrangement with pumps	
1.4	Two different type of heat exchangers can be used to carry out experiments using common mother unit		
1.5	One heat exchanger is supplied for assembly and disassembly practice.		
2	Purpose		
2.1	To state and identify different types of heat exchangers		
2.2	To identify components of a heat exchanger		
2.3	To carry out servicing and preventive maintenance of a heat exchanger		
3	Required Components in the System		

3.1	Mother unit: The unit should consists of, Glass tube Rotameter 0 to 1000 LPH for hot and cold-water flow rate measurement, 1 no. each 8 point Digital temperature indicator with sensors at suitable locations to be provided. Sump tank of 40 lit capacity, MOC: SS 304, 16 SWG 1 No. Water circulation pumps: Centrifugal type, 0.25 HP, 100LPH, 2 nos. Make: Reputed Electrical water heater: 1 KW, in line type. Electrical control panel complete with necessary switches, wiring and digital display. Structure: Made of suitable MS square section & Powder coated.		
3.2	Shell and Tube Type Heat exchanger: Made in borosilicate glass with 3" diashell and tubes of 12mm dia 600mm long each. Area (0.5sq.m), Number of tubes 25, Connections for hot and cold water in shell and tubes respectively.		
3.3	Piping: PPR with SS embedded threading		
3.4	Multi pass heat exchanger for assembly- disassembly practice: MOC: SS 304, Floating head (Pull through type) Shell and tube (1-2) type heat exchanger 3" diashell with copper tube ½" dia and 600mm length. number of tubes 25, segmental baffles 25% cut.		
3.5	Toolkit required to assemble- disassemble Multi pass heat exchanger and its three spare gasket set.		
3.6	Steel wire brush for cleaning inside the heat exchanger shell & Scraper for cleaning outside of tubes		
3.7	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.8	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
4	Operating manuals containing Basic Theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(5) : HEAT EXCHANGER (TUBE IN TUBE TYPE)

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/6			
Sl. No.	Item	Brief Specification	Qty.
5	Heat Exchanger: The trainer is designed to understand theory, constructional and operational features of different types of heat exchangers suitable for 1-Phase, 220-240 V, 50 Hz AC supply. (MCB's to be used in place of fuses).		1 No.
1	Major specifications		
1.1	Type	Tube in tube type heat exchanger	
1.3	Flow Arrangement	Hot and cold water arrangement with pumps	
1.4	Two different type of heat exchangers can be used to carry out experiments using common mother unit		
1.5	One heat exchanger is supplied for assembly and disassembly practice.		
2	Purpose		
2.1	To state and identify different types of heat exchangers		
2.2	To identify components of a heat exchanger		
2.3	To carry out servicing and preventive maintenance of a heat exchanger		

3	Required Components in the System		
3.1	Mother unit: The unit should consists of, Glass tube Rotameter 0 to 1000 LPH for hot and cold-water flow rate measurement, 1 no. each 8 point Digital temperature indicator with sensors at suitable locations to be provided. Sump tank of 40 lit capacity, MOC: SS 304, 16 SWG 1 No. Water circulation pumps: Centrifugal type, 0.25 HP, 100LPH, 2 nos. Make: Reputed Electrical water heater: 1 KW, in line type. Electrical control panel complete with necessary switches, wiring and digital display. Structure: Made of suitable MS square section & Powder coated.		
3.2	Tube in tube type heat exchanger: MOC: Copper for inner pipe. Inner pipe diameter: 20 mm		
3.3	Piping: PPR with SS embedded threading		
3.4	Multi pass heat exchanger for assembly- disassembly practice: MOC: SS 304, Floating head (Pull through type) Shell and tube (1-2) type heat exchanger 3" diashell with copper tube ½" dia and 600mm length. number of tubes 25, segmental baffles 25% cut.		
3.5	Toolkit required to assemble- disassemble Multi pass heat exchanger and its three spare gasket set.		
3.6	Steel wire brush for cleaning inside the heat exchanger shell & Scraper for cleaning outside of tubes		
3.7	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.8	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
4	Operating manuals containing Basic Theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(6) : REFRIGERATION TUTOR

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/7			
Sl. No.	Item	Brief Specification	Qty.
6	Refrigeration Tutor: The trainer is designed to understand theory, constructional and operational features of refrigeration and to study its performance characteristics suitable for 1-Phase, 220-240 V, 50 Hz AC supply. (MCBs to be used in place of fuses)		1 No.
1	Major specifications		
1.1	Capacity	1500 K.cal/Hr.	
1.2	Tonnage	0.5 Ton	
2	Purpose		
2.1	To identify components of an refrigeration unit		
2.2	To state need for eco-friendly refrigerant gas		
2.3	TO study of a typical refrigeration cycle		
2.4	Calculate COP at various loads		
3	Required Components in the System		
3.1	Hermetically Sealed Compressor		

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/7			
3.2	Expansion device: Thermostatic Expansion Valve		
3.3	Control chamber: Water tank of 20 lit capacity. MOC: SS, 16 SWG, inner as well as outer casing, with 40 mm insulation. This chamber has following facilities Arrangement to drain water Arrangement to house evaporator coil Arrangement to mount electrical heater Arrangement to house temperature Sensor		
3.4	Rotameter to measure refrigerant flow		
3.5	Evaporator: Water cooled type made of copper pipe		
3.6	Electrical Heater to load the system: 0.5 kW.		
3.7	Energy-meter for recording power consumption.		
3.8	Temperature Indicator (8 point) with Pt100 sensors.		8 No.s
3.9	Pressure gauges, panel mounted, back connection type		2 No.s
3.10	H.P. / L.P cut out		
3.11	Refrigerant: R134A		
3.12	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.13	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
3.14	Schematic Diagram to be enclosed in Manual.		
4	Operating manuals containing Basic theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(7) : PACKAGE AIR CONDITIONER

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/8			
Sl. No.	Item	Brief Specification	Qty.
7	Package Air Conditioner: Designed to understand theory, constructional and operational features of package air conditioner and to study its performance characteristics suitable for 1-Phase, 220-240 V, 50 Hz AC supply. (MCBs to be used in place of fuses)		1 No.
1	Major specifications		
1.1	Capacity	1500 K.cal/Hr.	
1.2	Tonnage	0.5 Ton	
1.3	Air Circulation	638 m ³ /Hr. approx.	
2	Purpose		
2.1	To identify components of an air-conditioning unit		
2.2	To state need for eco-friendly refrigerant gas		
2.3	To study of a typical air-conditioning unit.		
2.4	To study of cooling process		

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/8			
2.5	To study of a typical air-conditioning cycle		
2.6	To calculate COP at various loads		
2.7	To study Psychometric charts		
3	Required Components in the System		
3.1	Hermetically sealed Compressor		
3.2	Capillary		
3.3	Test chamber and ducting: The chamber will be made of MS powder coated sheet. There will be ducting in the ceiling (top) part of the chamber for cold air inlet. Removal (exhaust) ducting will be on all sides of the test chamber. The chamber will be of 3' x 3' x 3' or more. The test chamber will have a door. On the door a transparent window will be provided to view interior chamber. Houses sensors, thermostats and axial fan		
3.4	Rotameter to measure refrigerant flow rate		
3.5	Evaporator		
3.6	Electrical Heater to load the system: 0.5 kW with facility to vary the load		
3.7	Energy meter for recording power consumption		
3.8	Temperature Indicator (8 point) with sensors, 8 nos.		
3.9	Pressure gauges, 2 nos.		
3.10	Anemometer with digital indicator, (Portable)		
3.11	Digital LH/ RH indicator		1 set
3.12	H.P. / L.P cut out		
3.13	Refrigerant: Eco-friendly R 134A.		
3.14	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.15	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
4	Operating manuals containing Basic theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(8) : AUTOMOBILE AIR CONDITIONER TRAINER

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/9			
Sl. No.	Item	Brief Specification	Qty.
8	Automobile Air Conditioner Trainer :-The trainer is designed to understand theory, constructional and operational features of an automobile air conditioner and to study its performance characteristics suitable for 3-Phase, 400 V, 50 Hz AC supply. (MCBs to be used in place of fuses)		1 No.
1	Major specifications		
1.1	Model/ Make	Using original car air-conditioner components	
2	Purpose		

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/9			
2.1	To identify components of automobile air-conditioning unit		
2.2	To state need for eco-friendly refrigerant gas		
2.3	To study of cooling process		
2.4	To study of a typical air-conditioning cycle		
2.5	To study Psychometric charts		
3	Required Components in the System		
3.1	Car AC compressor –NEW Systems		
3.2	Electrical motor of ISI standard with VFD to vary the speed of the motor to simulate engine speed varying condition		
3.3	Wobble plate compressor mounting on brackets Capillary		
3.4	Evaporator		
3.5	Condenser		
3.6	AHU and Fan motor		
3.7	Hose tubes, receivers & expansion controls complete as per compressor		
3.8	Electric component & wiring harness		
3.9	Converter AC 230V to 12V DC		
3.10	Ammeter and Voltmeter		
3.11	Temperature Indicator (8 point) of Pt100 sensors.		8 Nos
3.12	Pressure gauges, panel mounted, back connection type		2 Nos
3.13	Electrical heater to load the system. Arrangement to vary the load.		
3.14	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.15	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
4	Operating manuals containing Basic Theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(9) : SPLIT TYPE AIR CONDITIONING TUTOR

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/10			
Sl. No.	Item	Brief Specification	Qty.
9	Split Type Air Conditioning Tutor: The trainer is designed to understand theory, constructional and operational features of split air conditioner and to study its performance characteristics suitable for 1-Phase, 220-240 V, 50 Hz AC supply. (MCBs to be used in place of fuses)		1 No.
1	Major specifications		
1.1	Capacity	2000 K.cal/Hr.	
1.2	Tonnage	0.75 Ton	
1.3	Moisture removal	.5 Lit/hr	
1.4	Air Circulation:	430 m3/hr approx.	

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/10			
2	Purpose		
2.1	To identify components of a split air-conditioning unit		
2.2	To study typical air-conditioning unit.		
2.3	To study cooling process		
2.4	To study the Summer, Winter and Monsoon air-conditioning process		
2.5	To study dehumidification and cooling process		
2.6	To calculate COP at various loads		
2.7	To study Psychometric charts		
3	Required Components in the System		
3.1	Hermetically sealed Compressor		
3.2	Capillary		
3.3	Control chamber and ducting houses sensors, thermostats and evaporator unit		
3.4	Rotameter to measure refrigerant flow		
3.5	Measuring vessel to measure water condensed at dew point conditions		
3.6	Evaporator unit		
3.7	Electrical Heater 0.5kW to load the system.		
3.8	Humidifier: Steam generation by using electrical heater		
3.9	Energy-meter for recording power consumption		
3.10	Temperature Indicator (8 point) with sensors		8Nos
3.11	Pressure gauges		2 Nos
3.12	Anemometer with digital indicator(Portable)		
3.13	Digital RH indicator		2 Nos
3.14	H.P. / L.P cut out		
3.15	Refrigerant Suitable for: R22/R134a		
3.16	MS test chamber with Acrylic door		
3.17	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.18	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
4	Operating manuals containing Basic Theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(10): DEEP FREEZER TRAINER

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/11			
Sl. No.	Item	Brief Specification	Qty.
10	Deep Freezer Trainer: learning concepts of thermodynamics of vapour compression refrigeration cycle and its application in Deep Freezer suitable for 1-Phase, 220-240 V, 50 Hz AC supply. (MCBs to be used in place of fuses)		1 No.

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/11			
1	Major specifications		
1.1	Capacity	185/200 Ltr	
1.2	Compressor	200 ltrs reciprocating compressor	
1.3	Condenser	Aircooled	
2	Purpose		
2.1	To identify components of a Deep Freezer		
2.2	To study typical Deep Freezer unit.		
2.3	To study cooling process		
2.4	To measure the flow rate and power input at various points		
2.5	To calculate efficiency		
2.6	To calculate COP		
2.7	To study Psychometric chart		
3	Required Components in the System		
3.1	Compressor		
3.2	Condensor		
3.3	Expansion Device		
3.4	Temperature indicators with sensors		
3.5	Evaporator		
3.6	Pressure Guage		
3.7	Energy Meter		
3.8	Electric Heaters		
3.9	HP/LP Cut-out		
3.10	Thermostat		
3.11	Insulated deep freezer cabinet		
3.12	Voltmeter		
3.13	Ammeeter		
3.14	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.15	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
4	Operating manuals containing Basic Theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(11) : DISPLAY CABINET TRAINER

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/12			
Sl. No.	Item	Brief Specification	Qty.
11	Display Cabinet Trainer : learning concepts of thermodynamics of vapour compression refrigeration cycle and its application in Display Cabinet suitable for 1-Phase, 220-240 V, 50 Hz AC supply. (MCBs to be used in place of fuses)		1 No.

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/12			
1	Major specifications		
1.1	Capacity	2 Ton	
1.2	Temperature	2 to 8 Degree C	
1.3	Refrigerant	R134A	
2	Purpose		
2.1	To identify components of a Display Cabinet		
2.2	To study typical Display Cabinet unit.		
2.3	To study cooling process		
2.4	To calculate COP		
2.5	To study Psychometric chart		
3	Required Components in the System		
3.1	All 3 Sides 12 mm thick glass		
3.2	Top side tuffen glass		
3.3	Ground + 2 shelves in glass.		
3.4	Led lights		
3.5	Back side sliders with transparent glass		
3.6	In-door refrigeration system.		
3.7	Copper made evaporating and condenser coil with aluminum fins.		
3.8	Digital temperature controller with sensor.		
3.9	Led lamp for on/off indication.		
3.10	on/off switch for system		
3.11	Stainless steel body.(s.s food grade)		
3.12	Control panel with schematic diagram and flow chart		
3.13	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.14	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
4	Operating manuals containing Basic Theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(12) - EVACUATING & REFRIGERANT CHARGING STATION

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/105			
Sl. No.	Item	Brief Specification	Qty.
12	Evacuating & Refrigerant Charging Station - Designed to understand theory, constructional and operational features of the system and to study its performance characteristics for Single phase, 220-240 V, 50 Hz AC supply. (MCBs to be used in place of fuses).		1 No.
1	Major specifications		

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/105			
1.1	Pump type	Vacuum Pump	
1.2	Pump construction	Two Stage Rotary pump with gas ballast & anti suck back.	
1.3	Capacity upto Vacuum can be handled	1000 microns of Hg	
1.4	Other important mountings	Graduated charging cylinder	
2	Requirements of the System		
2.1	All mountings such as Manifolds, valves, gauges and all necessary isolating valves shall be suitable to the system.		
2.2	All necessary arrangements has to be made for measurement of evacuated & charged systems such as weighing machine, Temperature gauge, Pressure gauge & etc.		
2.3	All safety mountings has to be mounted on the system against leakage of Refrigerants.		
2.4	Total system shall be built in such a way that total processes & Components of the entire system can be demonstrated.		
2.5	All the Gauges, Valves, Manifolds shall be of Reputed make		
3	Operating manuals containing basic theory, procedures to carry out the evacuation & Charging the Refrigeration system.		3 sets
4	Colour	Standard Colour	
5	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
6	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(13) - VISI COOLER TRAINER

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/116			
Sl. No.	Item	Brief Specification	Qty.
13	Visi Cooler Trainer : learning concepts of thermodynamics of vapour compression refrigeration cycle and its application in Visi Cooler suitable for 1-Phase, 220-240 V, 50 Hz AC supply. (MCBs to be used in place of fuses)		1 No.
1	Major specifications		
1.1	Capacity	180 L or above	
1.2	Temperature	2 to 8 Degree C	
1.3	Refrigerant	R134A	
2	Purpose		
2.1	To identify components of a Visi Cooler		
2.2	To study typical Visi Cooler unit.		
2.3	To study the food preservation phenomenon		
2.4	To calculate COP		
2.5	To study Psychometric chart		
3	Required Components in the System		
3.1	Compressor		
3.2	Condensor		
3.3	Expansion Device		
3.4	Temperature indicators with sensors		
3.5	Evaporator		
3.6	Pressure Gauge		
3.7	Energy Meter		

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/116			
3.8	Electric Heaters		
3.9	HP/LP Cut-out		
3.10	Thermostat		
3.12	Control panel with schematic diagram and flow chart		
3.13	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.14	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl sticker having a self-explanatory schematic diagram with flow chart.		
4	Operating manuals containing Basic Theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(14): ICE CANDY UNIT

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/118			
Sl. No.	Item	Brief Specification	Qty.
14	Ice Candy Unit - designed to understand theory, constructional and operational features of Ice Candy Unit and to study its performance characteristics suitable for Single Phase, 230 V, 50 Hz AC supply. (MCBs to be used in place of fuses)		1 No.
1	Major specifications		
1.1	Capacity	1500K.cal/Hr.	
1.2	Tonnage	0.5 Ton	
1.3	Refrigerant suitable for	R 404A	
1.4	Minimum Temperature to achieve	- 18 °C	
2	Purpose		
2.1	To identify components of a Ice Candy Unit		
2.2	To study the process		
2.3	To calculate COP at various loads		
3	Requirements of the System		
3.1	Hermetically sealed Reciprocating Compressor		
3.2	Condenser – Air cooled type with fan		
3.3	Evaporator – Copper coil immersed into tank.		
3.4	H.P. / L.P cut out		
3.5	Liquid line drier		
3.6	Accumulator		
3.7	Temperature Indicator s		
3.8	Pressure gauges		
3.9	Thermostatic Expansion valve & Solenoid valve to control candy mould box		
3.10	SS tank, mould box, candy with puff insulated SS body, agitator motor etc...		
3.11	Basic Structure: The complete plant assembled should be a single structure and mounted on		

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/118			
	heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.12	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
3.13	Control panel shall consist of temperature indicator, Thermostat, Pressure Gauges, Safety controls, Digital Voltmeter, Digital Ammeter & other controls.		
4	Operating manuals containing basic theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
7	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(15) : AIR CONDITIONING PLANT

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/119			
Sl. No.	Item	Brief Specification	Qty
15	Air Conditioning plant - Working Trainer Model Simulator with all controls including humidity control suitable for 3 Ph, 400V, 50Hz AC Supply (MCBs are to be used in place of fuses) (Make: Indlab, Model: IL-ACDI-02)		1 No
	Major Specifications:		
1.1	Type	Direct & indirect water chiller	
1.2	Capacity	6000 k.cal/hr	
1.3	Dimensions (L x D x H)	900 L x 750 D x 900 H mm	
2	Purpose:		
2.1	Experimental Air-conditioning plant to conduct experimental to determine the co-efficient of performance of the unit		
3	Requirements of the System		
3.1	Compressor : 3 ton hermetically sealed reciprocating compressor		
3.2	Water cooled condenser: Shell and tube type		
3.3	Tube material: 19mm OD integrally finned copper tube 19TPI		
3.4	Overall size : 220 D x 790 mm		
3.5	Water in / out 1 " BSP		
3.6	Evaporator: Aluminum fin bonded to copper tubes		
3.7	Blower size: 300 x 300 mm		
3.8	Motor Rating: 0.40 KW		
3.9	Refrigerant : R-22		
3.10	Water cooling tower complete with fan		
3.11	Control: HP/LP cutout switch		
3.12	Complete installation & Gas charging with running condition		
3.13	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.14	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		

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Ref: Enclosure - 2B/119			
Sl. No.	Item	Brief Specification	Qty
4	Operating manuals containing basic theory, Procedure to conduct experiments and troubleshooting		3 sets
5	Colour	Standard Colour	
6	Recommended spares for 2 years of normal operation 1 no motor 4 nos of Pt 100 sensors 1 Digital Temperature Indicator 1 set Electrical Connectors		1 set
7	Items required for commissioning at site	Touch up paint, brush etc. – Required qty.	1 set

LOT-26(16) : CONDENSING UNIT WITH OPEN TYPE COMPRESSOR AIR COOLED EVAPORATOR CONDENSER

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/120			
Sl. No.	Item	Brief Specification	Qty.
16	Condensing unit with open type compressor air cooled evaporator condenser controls etc suitable for Single phase, 230 V, 50 Hz AC supply. (MCBs to be used in place of fuses)		1 No.
1	Major specifications		
1.1	Compressor:	Open reciprocating Type, belt driven, Cap 1500k.cal/hr	
1.2	Refrigerant	R-22,, R-134a,or CFC	
1.3	Compressor Motor	2HP, 1Ph, 230V, 60Hz, AC	
1.4	Condenser size	16" x 16" - 4 row Internally grooved copper 3/8" tubing with aluminium air fins -side, top and bottom plates of 16SWG	
1.5	Condenser fan blade	Approx. 14" diameter of Aluminium	
2	Other Requirements		
2.1	Rotometer to measure the flow rate of liquid refrigerant and bypass the rotometer - 1 no		
2.2	Air flow measurement digital Anemometer control panel which consists of the following items mounted on : 8 channel programmable digital scanner for temperature indication of various points. Temperature controlling thermostat, DOL starter switch for compressor, Switches and indication lamps for steam generator, Axial flow fan, Heater, Mains HP and LP cut off switch, Digital ammeter, Voltmeter, 1 no each, Pressure gauge 4 nos, process line diagram		
2.3	The unit should be complete with gas charging and working condition of AC system. The whole unit mounted on painted/powder coated MS steel frame.		
3	The unit to be able to perform the following measurement/practical trade		
3.1	1)Dry bulb & wet bulb temperature of Air inlet & outlet of cooling coil duct		
3.2	2) Suction & Discharge pressure of compressor		
3.3	3) Inlet & outlet pressure of cooling coil.		
3.4	4) Flow rate of refrigerant at liquid line.		
3.5	5) Pressure drop at duct inlet (Orifice).		
3.6	Total system shall be built in such a way that total processes & Components of the entire system can be demonstrated. Size: 3' x 3' x 3'		
3.7	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty		

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/120			
	square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
3.8	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
5	Operating manuals containing Theory, Procedure to conduct experiments and troubleshooting		3 sets
6	Colour	Standard Colour	
7	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
8	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(17) : CUT SECTION MODEL

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/4			
Sl. No.	Item	Brief Specification	Qty.
17	Cut Section Model: The model has to be made out of used compressors. Section to take in such a way as to expose maximum parts such as piston, cylinder, motor winding, etc. are displayed. This helps show the internal constructional details of the compressor. Exposed parts are suitably painted with a colour code. Sections should be anodized.		3 No.s (1 No. each type)
1	Major specifications		
1.1	Type-1	Hermetically Sealed Compressor	
1.2	Type-3	Open type compressor	
1.3	Type-2	Semi-sealed compressor	
2	Purpose: To study & identify components of Refrigeration Compressor Unit.		
3	Model shall be mounted on a structure made of suitable MS square section & Powder coated.		
4	Operating & Parts manuals		3 Sets
5	Colour	Standard Colour	
6	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT-26(18) : TWO STAGE ROTARY VACUUM PUMP

Project: Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2B/107			
Sl. No.	Item	Brief Specification	Qty.
18	Two Stage Rotary Vacuum Pump - Designed to understand constructional and operational features of the system and to study its performance characteristics for Single phase, 220-240 V, 50 Hz AC supply. (MCBs to be used in place of fuses).		1 No.
1	Major specifications		
1.1	Pump type	Two Stage Water-Ring type pump	
1.2	Capacity	60-100 LPM (Approx.)	
1.3	Evacuation Capacity	50 microns of Hg	
1.4	Other important mountings	gas ballast anti suck valve	
2	Requirements of the System		
2.1	All mountings such as valves, gauges shall be suitable to the Pump design.		

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Ref: Enclosure - 2B/107			
2.2	All necessary arrangements has to be made for measurement operational parameters such as Pressure gauges, Temperature gauges & etc.		
2.4	All the Gauges, Valves shall be of Reputed make		
2.5	Basic Structure: The complete plant assembled should be a single structure and mounted on heavy duty square pipe of 16G thickness tubular frame soft grey colour powder coated, electrical control panel also fitted on tubular frame with Ampere meter, Voltmeter		
2.6	Panel Board: mounted on 12mm heavy duty poly carbonate with vinyl stickering having a self-explanatory schematic diagram with flow chart.		
3	Operating manuals containing basic theory & procedures to carry out the operations		3 sets
4	Colour	Standard Colour	
5	Recommended spares for 2 years of normal Operation	Please indicate the detailed list of spares in Technical bid without price.	1 set
6	Items required for commissioning at site	Touch up paint, Brush etc. – Required qty.	1 set

LOT –27 - REFRIGERATION & AIR CONDITIONING EQUIPMENT

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.					
Sl. No	Ref: Enclosure	Description	Brief Specification	Detailed Specification	Qty
1	2B/127	134A Refrigerant in cylinders with valves	R134A gas (Tetra Flouro Ethane) in 10kg company sealed cylinder	Capacity - 10 Kg with test Certificate.	2
2	2B/158	Accessories thormostatic expansion valve distributors, driers, (pencil solid core type etc.) accumulators, receivers, bellows type thermostat, HP Stat & LP Stat humidi stat, solenoid valves		Thermostatic Expansion Valve with separating orifice (Removable Orifice) 5 Ton Capacity. Distributor(Refrigerant for 5 Ton) Drier : (Core type) for 5 Ton cap Accumulator:5 Ton capacity Liquid Reciever : 5 Ton cap Pencil type Drier; Bellow type Thermostat HP Cutout LP Cutout HP & LP Cutout (combined) with manual restart Humidystat : Reputed make Solenoid Valve : 1/4" size	1
3	2B/147	Acid test kit		With acid resistant centrifugal pump 1/2 HP capacity	1
4	2B/109	Air Compressor two stage for oil less dry air with rust proof tank assemble heater and control	Max Pr. 10Kg/ sq.cm cap 45 Litre motor 1 HP		1
5	2B/108	Anemometer	Vane type	Reputed make	1
6	2B/152	Ball Valves service valves hand shut valves	1/4" to 7/8" Bava make hand shut off valve, service valve Threads protected	Reputed make	2
7	2B/15	Bending spring	External type for copper tube 3 to 6 mm. Dia		4
8	2B/115	Window Air Conditioning	Capacity 3000K Cal/hr	Reputed make	1
9	2B/24	Box spanner	6.4 to 10 mm		2
10	2B/150	Brazing alloy rods for 1/4" to 7/8" tubes Cu to cu, Cu to steel, Cu to brass and appropriate fluxes	Copper Brazing rod Silver rod Brass rod	Cu - Cu: Cu alloy rod 2kg, 1/8" size CU – Steel: Silver 43% rod; 100 gr; 1.2mm dia Cu - Brass: Brass-Ni rod 1/4kg; 3mm dia	1
11	2B/19	Capillary plug gauge			4

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Sl. No	Ref: Enclosure	Description	Brief Specification	Detailed Specification	Qty
12	2B/142	Circulating water pump (SMALL)	1/2 HP Capacity	Monoblock 1 Ph, 230V 50Hz, Reputed make	1
13	2B/138	Components of Car AC systems.	a) Wobble plate compressor with mounting brackets. b) Serpentine evaporator. c) Parallel flow condenser. d) Hoses, tubes, receive, expansion valve. e) Electrical components & wiring harness		1
14	2B/31	Compound gauge diameter 63 mm with recalibration set screw scale vacuum 76 mm pressure 15 Kg/Sq.cm		Reputed make with SS Body (-)30 to 150 PSI - 2 NO.s 0-300 PSI 2nos (Glycerene/Oil filled 1 No. each)	4
15	2B/154	Compressor tester for small hermetic compressor	Electrical panel with voltmeter, ammeter, relays and capacitor, MCB etc.	Reputed make	1
16	2B/111	Descaling pump set	Stainless steel impeller and housing complete with motor 1 HP and accessories.	Reputed make	1
17	2B/106	Dial thermometer remote controls armoured capillary dial 75 mm-50		Reputed make	2
18	2B/132	Dry N2 in cylinder with 2 stage regulator or commercial N2 in cylinder with drier unit and 2 stage regulator	Standard capacity - ISI standard	with Cylinder	1
19	2B/159	Electrical accessories current & potential relays start & run capacitors, PTC,s overload protector relays contractor.		1 Ph, 230V, 50Hz, AC - Reputed make	1
20	2B/156	Evaporator of direct cooled refrigerator with capillary heat exchanger	1 T capacity finned type evaporator		1
21	2B/157	Evaporator of Frost free refrigerator	200 -300litre capacity		1
22	2B/140	Fan coil unit with water valves	(2 & 3 way)	3 T capacity	1
23	2B/136	Filter driers for HFC-134 A for repairs retrofits	3/8" size		4
24	2B/125	Fin straightener / Fin comb			42
25	2B/13	Flaring tool set with Swedging	Single for tube 4.7 to 16 mm OD		4

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Sl. No	Ref: Enclosure	Description	Brief Specification	Detailed Specification	Qty
26	2B/135	Four way manifold with gauges			1
27	2B/34	Gas leak detector for halogen gas	Gas leak detector using halogen gas	3gr/annum capacity	1
28	2B/126	HC refrigerant in cylinder/ disposable containers	R134a , 340 gms	Reputed Make	2
29	2B/113	Heating Kit with infra red bulb	150 watt capacity		1
30	2B/155	Hermetic compressor	1.5 Ton-1 no	Reputed make	1
31	2B/151	Rotary Compressor	1/8 to 1/2 HP (approx) for use in repair work of appliances-1 no	Reputed make	2
32	2B/38	L-Allen Key set size	1.5 to 6.4mm		4
33	2B/35	Lapping plate	250x200mm		2
34	2B/123	Micron vacuum gauge	Capable of reading upto 20 microns		2
35	2B/21	Piercing plier 6-18 mm & Piercing valves both with access fittings		Reputed make	2
36	2B/20	Pinch off plier / crimping plier tool	16 to 18 mm dia		2
37	2B/17	Pinch off tool	For copper tube 6 to 18 mm dia		4
38	2B/68	Pipe bending tool	lever type with degree indicator for tube OD 6.4 to 16 mm		1
39	2B/16	Pipe cutter	Miniature for copper tube 6 to 18 mm dia – 2 nos With built-in reamer and space cutter for copper tube 3 to 32 mm – 2 nos		4
40	2B/145	Pipe threading dies & pipe vice			1
41	2B/149	Pop rivet gun		Reputed make	1
42	2B/131	Portable Air-LPG brazing kit with 2 Kg LPG cylinder, torches, hoses, standard make. a) With straight flame. b) With Cyclone / swirl jet flame.	Portable Air-LPG brazing kit with 2 kg LPG cylinder, torches, hoses - Standad make. 1) with straight flame. 2) With cyclone swirl jet flame.	Reputed make	1
43	2B/112	Pressure testing tank with lighting arrangement pressure gauge (0-35 Kg / sq.cm) double stage	Suitable Pressure testing tank of SS 304 Grade 18 Gauge having TIG welded joints with lighting arrangements.	Pressure gauge 0-35 kg/cm2 - double stage	1

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Sl. No	Ref: Enclosure	Description	Brief Specification	Detailed Specification	Qty
44	2B/30	Pressure gauge diameter 63 mm with recalibration set screw scale vacuum 76 mm pressure			4
45	2B/36	Punch hole for cutting gasket	4.7 to 16 mm dia		4
46	2B/153	Quick couplers process tube adaptor	1/4" to 7/8"		2
47	2B/18	Ratchet spanner	6.4 mm sg reversible		4
48	2B/121	Reciprocating compressor with provision of capacity control etc, for demonstration	Capacity 9000 K. cal/hr semi hermetic / open type.	Best indian	1
49	2B/128	Recovery unit for R134 A refrigerants with recovering cylinders.	Consisting of 1/6 HP or required capacity compressor condensor with fan, oil separator, accumulator valve inlet and outlet for gas recovery, compound gauges and pressure gauges with LP, HP cut outs individual unit for HFC.	Reputed make	1
50	2B/160	Recycling Unit		Suitable	1
51	2B/148	Refractometer	Portable with lens		1
52	2B/104	Refrigerant cylinder	Capacity 2.5 Kg – 1 No Capacity 30 Kg -1 No		2
53	2B/114	Refrigerator 165 litre using 134 A refrigerant	Single door refrigerator	Voltas/Bluestar/LG/Samsung/Godrej Make	1
54	2B/129	Reverse cycle AC/Heat pump	3000 K.cal/hr. Or 4500 K.cal/hr.		1
55	2B/23	Ring spanner set	4.7 mm to 16 mm – 4 nos 19 mm to 31.8 mm - 1No		5
56	2B/143	Safety gloves, eye protection glasses			4
57	2B/144	Safety shoes			20
58	2B/146	Schraeder valve core removal tool			1
59	2B/37	Scissor gasket cutting stainless steel	length 25 mm		4
60	2B/124	Sensor thermometer	Digital		2
61	2B/32	Serviceman thermometer in metal case	-30 to + 30 Deg.C.		2
62	2B/139	Shell and tube Condenser	Small capacity. Reputed Make	1.5 Ton capacity with valves	1
63	2B/141	Shell and tube DX chillers (Small)	5 Ton capacity	Reputed make	1
64	2B/33	Sling psychrometer mounted on			1

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Sl. No	Ref: Enclosure	Description	Brief Specification	Detailed Specification	Qty
		aluminum / plastic back scale –50 Deg. C to + 50 Deg.C			
65	2B/22	Spanner double ended	4.7 mm to 16 mm-4 nos 19 mm to 31.8 mm -1 No		5
66	2B/130	Split type AC	1 Ton AC With indoor unit & outdoor units and electronic remote control	Reputed make	1
67	2B/69	Blow Lamp	Capacity ½ litre		2
68	2B/14	Swedging tool	Punch type set of size, for tube 4.7 to 16 mm OD-4 nos Screw type, with adapter set of size for tube 4.7 to 16mm OD - 1 no		4
69	2B/39	T-Allen key set size	5/32" L & 1/8"		4
70	2B/133	Trichlorethylene bottle	700 ml		1
71	2B/134	Two way manifold with gauges	Rothenberger/ reputed make, Standard Manifold set.		1
72	2B/28	Valve key-T-Handle	4.7 & 6.4 mm Sq		4
73	2B/117	water Cooler	Storage type min 40 litres capacity	Voltas/Bluestar/Carrier make	1
74	2B/110	Scraper triangular blade removable			2
75	2B/137	Sealed ex-proof components for use in HC appliances: Thermostats Sealed OLPS solid state PTC's door switches lamp holders			4

LOT –28 : MEASURING TOOLS

**Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)",
Majuba, South Africa.**

Sl. No	Ref: Enclosure	Description	Brief Specification	Qty
1	1/125 2A/173	Depth Micrometer	0 - 100 mm	12
2	1/121	Dial Gauge- lever type	Graduation 0.01mm	8
3	1/122	Dial Gauge- lever type	Graduation 0.002mm	8
4	1/46, 1/123 2A/179	dial gauge with magnetic base	Test Indicator Gauge accuracy 0.01mm. Magnetic Base Stand non fine adjusting	28
5	1/120	Dial Indicator	0-10mm	8
6	1/124	Flexi. Magnetic dial gauge stand		5
7	1/117	Inside Micrometer - caliper type	5-30mm	8
8	1/68 2A/172	Micrometer set bigger than 100mm	Size: 100 to 125mm with 0.01mm accuracy	5
9	1/69	Micrometer set bigger than 100mm	Size: 125 to 150 mm with 0.01mm accuracy	3
10	1/70	Micrometer set bigger than 100mm	Size: 150 to 175 mm with 0.01mm accuracy	3
11	1/108, 2A/168 2B/81	Micrometer Outside	0-25mm	25
12	1/109, 2A/169	Micrometer Outside	25-50mm	23
13	1/110 2A/170	Micrometer Outside	50-75mm	23
14	1/111 2A/171	Micrometer Outside	75-100mm	23
15	1/112	Micrometer Outside	100-125mm	15
16	1/113	Micrometer Outside	125-150mm	15
17	1/114	Micrometer Outside	150-175mm	15
18	1/118	Micrometer Outside Digital	0-25mm	8
19	1/119	Micrometer Outside Digital	25 - 50mm	8
20	1/129	Radius gauge- set	Go / No Go set in inch & metric- Assorted sizes	5
21	1/38	Telescopic gauge 12.7-19	gauge 12.7-19 with 0.01mm accuracy	15
22	1/39	Telescopic gauge 19-32	gauge 19-32 with 0.01mm accuracy	15
23	1/40	Telescopic gauge 32-54	gauge 32-54 with 0.01mm accuracy	15
24	1/41	Telescopic gauge 54-90	gauge 54-90 with 0.01mm accuracy	15
25	1/105 2A/174	Vernier caliper 150 mm	150mm with accuracy of 0.02mm	23
26	2A/175	Vernier caliper 200 mm	200mm accuracy 0.02mm	8
27	2B/80	Vernier calipers	250mm	1
28	1/106	Vernier calipers	300mm accuracy 0.02mm	15
29	1/107	Vernier calipers Digital	200mm	15
30	1/115, 2A/176	Vernier depth gauge	300mm	8
31	1/116	Vernier Height Gauge	0-600mm	5
32	2B/82	Vernier Height Gauge	250mm	1
Please note that above measuring instruments shall be of MAKE – MITUTOYO JAPAN / TESA / BAKER only				

LOT-29 BANDSAW MACHINE

LOT-29 (1) : HORIZONTAL BANDSAW

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 1/91			Qty: 1 no.
TECHNICAL SPECIFICATION			
Sl. No.	Item	Brief Specification	Qty
1	Horizontal Bandsaw Machine with all standard accessories and Electrical suitable for 380/400V, 3Phase, 50Hz, AC supply or 220/230V, Single Phase, 50Hz, AC supply		1
1	Major specifications		
1.1	Cutting capacity (Rectangle)	8" x 8"	
1.2	Band Dimension	3505 x 27 x 0.9 mm	
1.3	Cutting Speed	20 – 100 m/min	
1.4	Saw Motor Power	=/> 2 HP	
1.5	Hydraulic unit power	=/> 0.5 HP	
1.6	Coolant pump power	=/> 0.15 HP	
2	Required Accessories / Spares		
2.1	Additional blade	2 nos	
2.2	Roller support stand 1meter long	1 no	
3	Features		
3.1	Blade speed selection thru AC variable frequency drive		
3.2	Hydraulic blade tensioning.		
3.3	Infinitely variable feed control valve for setting the cutting rate		
3.4	Inbuilt coolant tank with coolant pump.		
3.5	High efficiency Hydraulic power pack		
3.6	Adjustable Heavy duty movable blade guide.		
3.7	Separate electrical control panel.		
3.8	Automatic Switch Off after Cut completed and reach desire vertical position		
3.9	Automatic Machine OFF, in case of blade breakage		
4	Colour of machine :	Dual Colour : Soft Grey (RAL-7035) and Himmel Blue (RAL-5015) Polyurethane Paint	
5	Set of mechanical and electrical spare parts for 2 year normal operation. Please indicate the detailed list of spares in Technical bid without price.		1 Set
6	Operation, Maintenance and spare parts manual		3 Sets
7	Items required for Erection & Commissioning to be supplied with each machine.	• Touch up paint - 1/2 litre each colour in airtight sealed containers, Paint brush ½" 1 no. for each colour • Initial fill of Hydraulic/Lubrication/ Cutting Oil, if any in separate sealed containers. • Cotton waste- 2 kg, Cora cloth – 5 Mtrs • Set of anti vibration pads/Foundation bolts and leveling plates.	1 Set

LOT-29 (2): VERTICAL BANDSAW

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 1/92		Qty: 1 no.	
TECHNICAL SPECIFICATION			
Sl. No.	Item	Brief Specification	Quantity
2	Vertical Bandsaw with all standard accessories and Electrical suitable for 380/400V, 3Phase, 50Hz, AC supply or 220/230V, Single Phase, 50Hz, AC supply		1
1	Major specifications		

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 1/92			Qty: 1 no.
TECHNICAL SPECIFICATION			
1.1	Power	750 W	
1.2	Revolutions	1400 min-1	
1.3	Speed	370/800 m/min	
1.4	Adjustable angle	2 x 45 deg ; 90 deg	
1.5	Cutting	Maximum 120 mm	
1.6	Table size	290 x 290 mm	
2	Set of mechanical and electrical spare parts for 2 year normal operation. (Each Equipment 1 Set) Please indicate the detailed list of spares in Technical bid without price.		1 set
3	Operation, Maintenance and spare parts manual		3 sets

LOT -30 MECHATRONICS AND ROBOTICS EQUIPMENT

LOT- 30(1) : PLC TRAINER KIT

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2A/216			Quantity: 1 No.
Item: PLC Trainer Kit : PLCTrainer Kit with all standard accessories to carry out different experiments and suitable for 1 phase 220 / 230 V, 50HZ AC.			
1.	Objective: - For use in Vocational Training Centre for giving practical training to students who passed 10th standard and above. - To understand and experiment the functionality of PLC, interfaces of various devices and components to develop different circuits and control of practical applications. - To teach and train the students in programming of different types of PLCs and execute programmes developed to understand static & dynamic simulators.		
2	Major Technical Specification: - The system shall be desktop rack type and modular with suitable table. - The rack to be provided with DIN rail for clipping on different PLCs and can be expanded - Static Modules comprising process control simulators , Manufacturing automation control simulators and other simulators - Dynamic Modules comprising sensor module, Relay module, star delta module etc. - Logic controller, software, power supply etc.		
3	NOTE: All the softwares and kits should be compatible and integrate with the complete system.		
4	Operating manual containing Basic theory, Procedure to conduct experiment and troubleshoot in hard copy and soft copy in CD/Pen drive.		3 sets each
5	Set of spare parts recommended for two years normal operation of machine	Please indicate the detailed list of spares in Technical bid without price.	1 set each
6	Colour of equipment :	Standard	
7	Items required for Erection & Commissioning.	- Touch up paint – required qty - Initial fill of Hydraulic/Lubrication/Cutting Oil, if any in separate sealed containers. - Cora cloth – 5 Mtrs.	1 set each

LOT -30(2) : DIGITAL SENSOR MODULE

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2A/217			Quantity: 1 No.
Item: Digital Sensor Module : Digital SensorKit with all standard accessories to carry out different experiments and suitable for 1 phase 220 / 230 V, 50HZ AC.			
1.	Objective: - For use in Vocational Training Centre for giving practical training to students who passed 10th standard and above. - To understand and experiment the basic concepts in sensor technology with a focus on digital sensors prevalent in the current industry.		
2	Major Technical Specification: - The system shall have Aluminium profile plate for mounting the components and measuring equipment with suitable table. - Distribution unit with Power supply - Digital counter display for frequency, multi meter, vernier caliper, etc. - Software - Test pieces for sensors.		

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.			
Ref: Enclosure - 2A/217			Quantity: 1 No.
Item: Digital Sensor Module : Digital SensorKit with all standard accessories to carry out different experiments and suitable for 1 phase 220 / 230 V, 50HZ AC.			
3	NOTE: All the softwares and kits should be compatible and integrate with the complete system		
4	Operating manual containing Basic theory, Procedure to conduct experiment and troubleshoot in hard copy and soft copy in CD/Pen drive.		3 sets each
5	Set of spare parts recommended for two years normal operation of machine	Please indicate the detailed list of spares in Technical bid without price.	1 set each
6	Colour of equipment :	Standard	
7	Items required for Erection & Commissioning.	• Touch up paint – required qty • Initial fill of Hydraulic/Lubrication/Cutting Oil, if any in separate sealed containers. • Cora cloth – 5 Mtrs.	1 set each

LOT- 30(3) : ANALOGUE SENSOR MODULE

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2A/218			Quantity: 1 No.
Item: Analogue Sensor Module : Analogue SensorKit with all standard accessories to carry out different experiments and suitable for 1 phase 220 / 230 V, 50HZ AC.			
1.	Objective: 1. For use in Vocational Training Centre for giving practical training to students who passed 10th standard and above. 2. To understand and experiment the basic concepts in sensor technology with a focus on ultrasonic, strain and distance measurement by means of optical sensors prevalent in the current industry.		
2	Major Technical Specification: • The system shall have Aluminium profile plate for mounting the components and measuring equipment with suitable table. • Distribution unit with Power supply • Digital counter display for frequency etc. • Software • Test pieces.		
3	NOTE: All the softwares and kits should be compatible and integrate with the complete system.		
4	Operating manual containing Basic theory, Procedure to conduct experiment and troubleshoot in hard copy and soft copy in CD/Pen drive.		3 sets each
5	NOTE: All the softwares and kits should be compatible and integrate with the complete system		
6	Set of spare parts recommended for two years normal operation of machine	Please indicate the detailed list of spares in Technical bid without price.	1 set each
7	Colour of equipment :	Standard	
8	Items required for Erection & Commissioning.	• Touch up paint – required qty • Initial fill of Hydraulic/Lubrication/Cutting Oil, if any in separate sealed containers. • Cora cloth – 5 Mtrs.	1 set each

LOT - 30(4) : DYNAMIC MODULE

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2A/219			Quantity: 1 No.
Item: Dynamic Module :Dynamic ModuleKit with all standard accessories to carry out different experiments and suitable for 1 phase220 / 230 V, 50HZ AC or 3 Phase380/400V, 50HZ.			
1.	Objective: 1. For use in Vocational Training Centre for giving practical training to students who passed 10th standard and above. 2. To understand intermediate level of dynamic module with Sensor and Relay module.		
2	Major Technical Specification: Sensor Module: Set of inductive, capacitive, optical, magnetic read switch sensors, micro switches etc. Demonstration of sensor operation and control through PLC. Relay Module: Set of NC relays with instrument load such as fan and lamps to demonstrate the operation through PLC. Star Delta Module: Set of contactors for starting the 3 phase induction motor.		
3	NOTE: All the softwares and kits should be compatible and integrate with the complete system.		
4	Operating manual containing Basic theory, Procedure to conduct experiment and troubleshoot in hard copy and soft copy in CD/Pen drive.		3 sets each
5	Set of spare parts recommended for two years normal operation of machine	Please indicate the detailed list of spares in Technical bid without price.	1 set each
6	Colour of equipment :	Standard	
7	Items required for Erection & Commissioning.	• Touch up paint – required qty • Initial fill of Hydraulic/Lubrication/Cutting Oil, if any in separate sealed containers. • Cora cloth – 5 Mtrs.	1 set each

LOT 30(5) : LINEAR TRANSFER SYSTEM

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.	
Ref: Enclosure - 2A/220	Quantity: 1 No.
Item: Linear Transfer System : Linear Transfer System Kit with all standard accessories to carry out different experiments and suitable for 1 phase 230 V, 50HZ AC.	
1.	Objective: 1. For use in Vocational Training Centre for giving practical training to students who passed 10th standard and above. 2. To understand and experiment the basic concepts of automated transport & sorting process. 3. PLC programming and interfacing 4. Pneumatics/electronic pneumatic 5. Sensor technology 6. Automation design
2	Major Technical Specification: • Complete workstation mounted on an aluminium profile plate with operating console with suitable table. • Belt conveyor • Pick & place unit

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2A/220			Quantity: 1 No.
Item: Linear Transfer System : Linear Transfer System Kit with all standard accessories to carry out different experiments and suitable for 1 phase 230 V, 50HZ AC.			
	• Horizontal transfer unit • Transfer module (Rotary pick & place unit) • 6 station rotary indexing table • Drilling module • PLC software. • PC with latest configuration, required softwares and hardwares.		
3	NOTE: All the softwares and kits should be compatible and integrate with the complete system.		
4	Operating manual containing Basic theory, Procedure to conduct experiment and troubleshoot in hard copy and soft copy in CD/Pen drive.		3 sets
5	Set of spare parts recommended for two years normal operation of machine	Please indicate the detailed list of spares in Technical bid without price.	1 set
6	Colour of equipment :	Standard	
7	Items required for Erection & Commissioning.	• Touch up paint – required qty • Initial fill of Hydraulic/Lubrication/Cutting Oil, if any in separate sealed containers. Cora cloth – 5 Mtrs.	1 set

LOT 30(6) : SIX AXIS ROBOT

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2A/221		Qty : 1 no.	
Sl.No.	Description	Brief Specifications	Qty
1	Item: Six Axis Robot : A collaborative Robot with Pedestal base and all standard accessories to carry out different experiments and and Electricals suitable for 1 phase 100-240V 50Hz AC		1
2	General specifications		
2.1	Controller	one High-speed input for belt tracking, 16 Digital input and output, and 2 analog input or output. Must Have a communication interface (RJ45 connector) for TCP/IP, Modbus TCP, Modbus RTU, ProfiNet and Ethernet/IP	
2.2	Path type	Point to Point, Linear&Circular interpolation	
2.3	Application	The unit should be with a cobot, gripper and suitable pedestal to simulate the functioning of the cobot	
3	Main specifications		
3.1	No. of axes	6	
3.2	Operating Radius	620 mm	
3.3	Pay load capacity	3 Kg	
3.4	Positional accuracy	+/-0.02 mm	
3.5	Programming	Graphical drag & drop	
3.7	Suitable software	inclusive	
4	Operation/ Programming/Spare parts manual		3 sets

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2A/221		Qty : 1 no.	
5	Set of Electrical & Mechanical spare parts recommended for two years normal operation	Please indicate the detailed list of spares in Technical bid without price.	1 Set
6	Colour of machine	Standard	1 Set
7	Items required for Erection & Commissioning	Touch up paint – 1/2 lt each colour, cotton waste- ½ kg, initial fill of oil etc to be supplied.	1 Set

LOT 30(7) : ROBOT APPLICATION EXPERIMENTAL KIT

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2A/222		Qty : 1 no.	
Sl.No.	Description	Brief Specifications	Qty
1	Item: Robot Application experimental Kit : A collaborative Robot with Pedestal base and all standard accessories to carry out different experiments and and Electricals suitable for 1 phase 100-240V 50Hz AC		1
2	General specifications		
2.1	Controller	one High-speed input for belt tracking, 16 Digital input and output, and 2 analog input or output. Must Have a communication interface (RJ45 connector) for TCP/IP, Modbus TCP, Modbus RTU, ProfiNet and Ethernet/IP	
2.2	Path type	Point to Point, Linear&Circular interpolation	
2.3	Application	The kit should include 2 jaw Pneumatic gripper, software, Pneumatic vice, Pneumatic chuck, paint kit, Laser Pointer, PLC, HMI, Compressor, set of push buttons and servo motor for pneumatic chuck. Function that can be simulated using this kit are - Pick and place – vertical stacking & horizontal palletizing - Pick and place with machining simulation - Assembly and disassembly - Gluing simulation using Laser pointer - Testing bank of push button switches - Basic painting simulation using paint brush	
3	Main specifications		
3.1	No. of axes	6	
3.2	Operating Radius	620 mm	
3.3	Pay load capacity	3 Kg	

3.4	Positional accuracy	+/-0.02 mm	
3.5	Programming	Graphical drag & drop	
3.7	Suitable software	inclusive	
4	Operation/ Programming/Spare parts manual		3 sets
5	Set of Electrical & Mechanical spare parts recommended for two years normal operation	Please indicate the detailed list of spares in Technical bid without price.	1 Set
6	Colour of machine	Standard	1 Set
7	Items required for Erection & Commissioning	Touch up paint – 1/2 lt each colour, cotton waste- ½ kg, initial fill of oil etc to be supplied.	1 Set

LOT 30(8) : INTEGRATION OF ROBOT WITH AUTOMATION

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa.			
Ref: Enclosure - 2A/223			Quantity: 1 No.
Item: Integration of Robot with Automation: Integration of Robot with Automation Kit with all standard accessories to carry out different experiments and suitable for 1 phase 230 V, 50HZ AC.			
1.	Objective: 1. For use in Vocational Training Centre for giving practical training to students who passed 10 th standard and above. 2. To understand and experiment the basic concepts and simulate pick & place, assembly, different mechanical operations like welding etc..		
2	Major Technical Specification: Complete workstation mounted on suitable table having operating console consisting of: • Rotary Pick & place unit • Belt conveyor • Weighing module • PLC • Robot- 4 Axis with Payload Capacity 6 Kgs • Power supply unit etc. • With suitable software of latest configuration • Suitable stabilizer		
3	NOTE: All the softwares and kits should be compatible and integrate with the complete system.		
4	Operating manual containing Basic theory, Procedure to conduct experiment and troubleshoot in hard copy and soft copy in CD/Pen drive.		3 sets
5	Set of spare parts recommended for two years normal operation of machine	Please indicate the detailed list of spares in Technical bid without price.	1 set
6	Colour of equipment :	Standard	
7	Items required for Erection & Commissioning.	• Touch up paint – required qty • Initial fill of Hydraulic/Lubrication/Cutting Oil, if any in separate sealed containers. • Cora cloth – 5 Mtrs.	1 set

LOT – 31 INDUSTRY 4.0 SETUP IN MANUFACTURING MODULE (PORTABLE)

Project: “Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)”, Majuba, South Africa.		
Ref: Enclosure - 2A/224		Qty: 1 No.
TECHNICAL SPECIFICATION		
Sl. No.	Description	Qty
1	Comprehensive modular training system replicating a real smart factory environment for learning Industrial Automation, Mechatronics, IoT, and Data Analytics. Demonstrates complete digitalised manufacturing with material handling, sorting, processing, and storage. Independent AI-based quality control.	1
1.1	Major Specifications	
1.1.1	Technology	
1.1.2	Modules	
1.1.3	Usage	
1.1.4	Controllers	
1.1.5	Dashboard	
1.1.6	Programming	
1.1.7	Connectivity	
1.1.8	Dimensions	
1.2	Key Features	
1.2.1	Real-time production and performance monitoring	
1.2.2	Cloud-based data logging and visualisation	
1.2.3	Predictive maintenance and fault simulation	
1.2.4	Open-source and PLC integration	
1.2.5	Modular and scalable factory layout	
1.2.6	Demonstrates Industry 4.0 concepts end-to-end	
1.2.7	OPC UA platform-independent data exchange.	

LOT-32 PILLAR DRILL MACHINES

LOT-32 (1): PILLAR DRILLING MACHINE – CAP. 25MM

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."			
Ref: Enclosure - 1/83		Qty: 2 nos	
TECHNICAL SPECIFICATION			
Sl. No.	Item	Brief Specification	Qty
1	Pillar Drilling Machine with all standard accessories and Electrical suitable for 380/400V, 3Phase, 50Hz, AC supply		2
1	Major specifications		
1.1	Drilling capacity in steel / MT in spindle	25 mm / MT3	
1.2	Tapping Capacity	M16	
1.3	No./Range of spindle speeds	10/ 100-2700 rpm	
1.4	No. / Range of power feeds	3 / 0.1, 0.2 & 0.3	
1.5	Spindle traverse	140 mm	
1.6	Pillar diameter	120 mm	
1.7	Max. distance b/w center of spindle and pillar front	260 mm	
1.8	Max. distance b/w spindle and table	610 mm	
1.9	Max. distance b/w spindle and base	1080 mm	
1.10	Table working surface diameter	335 mm	
1.11	Base working surface dimension	320 x 300 mm (DxW)	
1.12	Motor Power	1.5 kW	
1.13	Coolant Motor Power	0.1 kw	
1.14	Colour of the Machine:	Dual colour: Soft Grey (RAL-7035) and Himmel Blue (RAL-5015) Polyurethane Paint	
2	Required Accessories / Spares		
2.1	Coolant pump motor and pipe fittings		1 set
2.2	Halogen machine lamp		1 set
2.3	Drill chuck 19 mm with key and arbor		1 set
2.4	Machine vice 6" swivel base with 'T' bolts		1 set
2.5	Reduction sleeve MT3-MT2		1 set
2.6	Reduction sleeve MT3-MT1		1 set
2.7	Service Tool Kit		1 set
2.8	DOL starter		1 set
3	Set of mechanical and electrical spare parts for 2 year normal operation. Please indicate the detailed list of spares in Technical bid without price.		1 set
4	Operation, Maintenance and spare parts manual		3 sets
5	Items required for erection and commissioning	• Touch up paint - 1/2 litre each colour in airtight sealed containers, Paint brush ½" 1 no. for each colour • Initial fill of Hydraulic/Lubrication/Cutting Oil, if any in separate sealed containers. • Cotton waste- 2 kg, Cora cloth – 5 Mtrs • Foundation bolts and levelling plates.	1 set

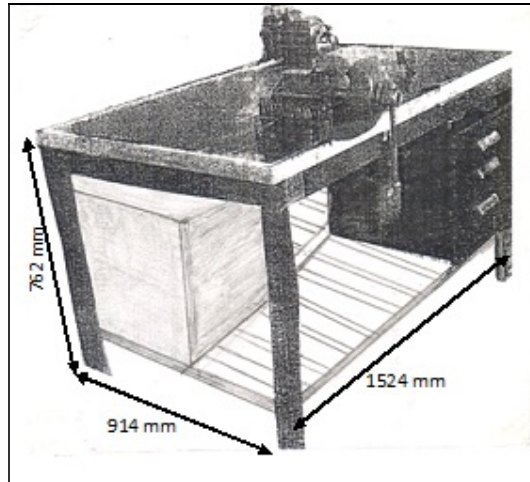
LOT-32 (2): Pillar Drilling Machine – CAP. 20mm

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."			
Ref: Enclosure - 2A/37 & 4A/24		Qty: 3 nos	
TECHNICAL SPECIFICATION			
Sl. No.	Item	Brief Specification	Quantity
1	Pillar Drilling Machine with all standard accessories and Electrical suitable for 380/400V, 3Phase, 50Hz AC supply		3
1	Major specifications		
1.1	Drilling capacity in steel / MT in spindle	20 mm / MT2	
1.2	Tapping Capacity	M12	
1.3	No./Range of spindle speeds	10/ 100-2700 rpm	
1.4	Feed	Hand	
1.5	Spindle traverse	125 mm	
1.6	Pillar diameter	>75 mm	
1.7	Max. distance b/w center of spindle and column front	200 mm	
1.8	Max. distance b/w spindle and table	300 mm	
1.9	Max. distance b/w spindle and base	600 mm	
1.10	Table working surface diameter	370 mm	
1.11	Base dimension	385 x 375 mm (DxW)	
1.12	Motor Power	0.75 kW	
1.13	Coolant Motor Power	0.1 kw	
	Colour of the Machine:	Dual colour: Soft Grey (RAL-7035) and Himmel Blue (RAL-5015) Polyurethane Paint	
2	Required Accessories / Spares		
2.1	Coolant pump motor and pipe fittings		1 set
2.2	Halogen machine lamp		1 set
2.3	Drill chuck 19 mm with key and arbor		1 set
2.4	Machine vice 4" swivel base with 'T' bolts		1 set
2.5	Reduction sleeve MT2-MT1		1 set
2.6	Service Tool Kit		1 set
2.8	DOL starter		1 set
3	Set of mechanical and electrical spare parts for 2 year normal operation. Please indicate the detailed list of spares without prices in technical bid.		1 set
4	Operation, Maintenance and spare parts manual		3 sets
5	Items required for erection and commissioning	• Touch up paint - 1/2 litre each colour in airtight sealed containers, Paint brush ½" 1 no. for each colour • Initial fill of Hydraulic/Lubrication/Cutting Oil, if any in separate sealed containers. • Cotton waste- 2 kg, Cora cloth – 5 Mtrs • Foundation bolts and leveling plates.	1 set

LOT-33 WORK BENCHES

LOT -33(1) : WORK BENCHES- TWIN STATION WITH VICE

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."	
Description: Work Benches- Twin Station with vice	
	Qty
Ref: Enclosure - 1/ 158	4
TOTAL	4



- Size of work bench : 1524mm Length x 914mm Breadth x 762mm Height
- Vice – Heavy duty : 152 mm (Diagonally Opposite)

Bottom Structure

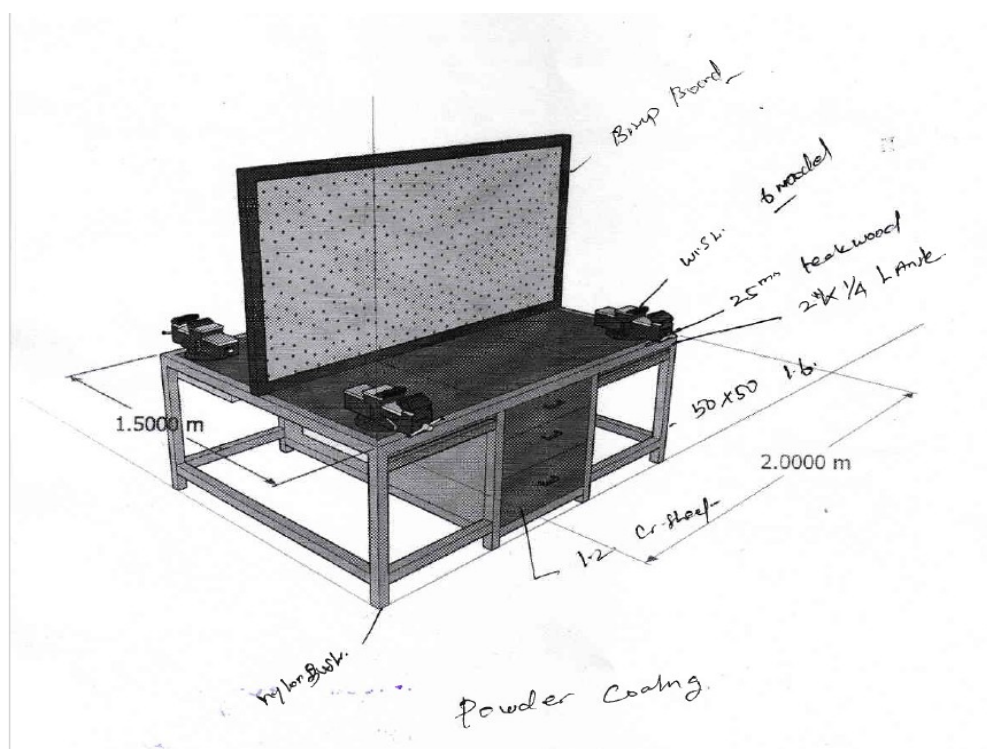
- 76mm Channel for leg & cross supports, bottom shelf "L" angle outer frame, bottom rack made of "sal" wooden strip.
- Table construction should be sturdy and should be capable of bolting to the floor to avoid vibrations.

Table Top

- 51mm thick "Akasia" wood fitted with 51mm x25mm aluminium "L" angle beading.
- 3 Drawer Box – 2 nos. diagonally placed.
- Cabinet size : 457mm Length x 533 Depth x 533mm Height
- Sheet Thickness : 18 SWG CRC sheet
- Drawer fascia : 102mm x 2 nos & 203mm x 1 no
- Dividers : Set of 3 dividers in each drawer (457mm Length x 533mm Depth x 178mm Height)
- Handle : Brass
- Lock : Central Locking system
- Sliding of drawers : With ball bearings
- Colour : Powder coated –Polyurethane grade Grey colour for stationary parts and Himmel Blue for moving parts (Drawers)

LOT -33(2) : WORK BENCHES- FOUR STATION WITH VICE

Project: "Setting up of Gandhi-Mandela Centre of Specialisation for Artisan Skills (GMCOS)", Majuba, South Africa."	
Description: Work Benches- Four Station with vice	
	Qty
Ref: Enclosure - 1/ 157	4
Ref: Enclosure - 2A/ 193	2
Ref: Enclosure - 2B/ 122	2
Ref: Enclosure - 3/ 45	8
Ref: Enclosure - 4A/ 37	15
TOTAL	31



- Table Size (L x W x H)
(without peg board partitioning) (in mm) : 2000 x 1500 x 1000
- Height of detachable / bolt-able peg board (in mm) : 2000 (H)
- Leg material : 50 x 50 1.6g 1st quality CR pipe
- Leg height: (in mm) Foot rest : 100
- Top Frame: 2' x 1/4' L Angle
- Top Material : 25mm Teak Wood Polished
- Sheet thickness for cabinets: MS steel CRCA sheet 20 SWG
- Bottom of cabinets: MS steel CRCA sheet 18 SWG
- Stiffeners: MS steel CRCA sheet 16 SWG
- Central Storage Drawer fascia: No. x Size (in mm) : 1x 100, 1x 200, 1x 400 on both sides (sample image enclosed)
- Central Storage Drawer size: (in mm): 600x 600 x 100 mm – 2 nos. (Front and Back)
- 600 x 600 x 150 mm – 2 nos. (Front and Back)
- 600 x 600 x 300 mm – 2nos. (Front and Back)

- Side Drawer fascia: No. x Size (in mm) : 550 x 700 x 100 mm – 4 nos. (sample image enclosed) with divot type for pulling purpose.
- Sheet thickness for drawers: MS steel CRCA sheet 18 SWG
- Sheet thickness for fascia: MS steel CRCA sheet 18 SWG
- Partition of each drawer: Adjustable type
- Drawers load carrying capacity: 80 kg
- Handles: Central Storage Drawers: Aluminium extruded with integral label holder protected with plastic
Side Drawer: Divot type fascia for easy pulling / sliding of side drawers
- Standard Features:
 - a) Central locking system with push lock one each per cabinet
 - b) All drawers run on special ball bearings for smooth operation
 - c) Vice Model No. 6 - 4 Nos
 - d) Powder coated –Polyurethane grade Grey colour for stationary parts and Himmel Blue for moving parts (Drawers)
 - e) Table construction should be sturdy and should be capable of bolting to the floor to avoid vibrations.
- Peg Board for hanging tools
 - a) CR frame based peg board with easy to fix hooks to hang hand tools in operation
 - b) 20 hooks of various lengths per peg board to be provided and all hooks must have stoppers to avoid tools from falling.
 - c) Should be detachable in nature

End of Enclosure - I