INVITATION FOR QUOTATION

TEQIP-III/2019/dced/Shopping/_____ **29-July-2019**

To,

WHOMSOEVER IT MAY CONCERN

Sub: Invitation for Quotations for supply of Goods

Dear Sir,

1. You are invited to submit your most competitive quotation **(in hard copy only)** for the following packages **(one quotation for one package)** with item wise detailed specifications given at annexure I,

Sr. no.	Package Code	Package Name
1	TEQIP- III/BH/dced/307	ME P2
2	TEQIP- III/BH/dced/308	ME P3
3	TEQIP- III/BH/dced/309	ME P4

Note: Package wise detailed specification is attached (annexure-I) with this invitation letter and also made available on the institute website.

2. You must also submit the following information along with the bid.
   i. Supplier Name:
   ii. Address (with Pin Code):
   iii. Contact person Name:
   iv. Email ID:
   v. Mobile No.
   vi. GST No.
   vii. PAN No.
3. Government of India has received a credit from the International Development Association (IDA) towards the cost of the **Technical Education Quality Improvement Programme**

[TEQIP]-Phase III Project and intends to apply part of the proceeds of this credit to eligible payments under the contract for which this invitation for quotations is issued.

4. Quotation,

   4.1 The contract shall be for the full quantity as described above.

   4.2 Corrections, if any, shall be made by crossing out, initialing, dating and re writing.

   4.3 All duties and other levies payable by the supplier under the contract shall be included in the unit price.

   4.4 Applicable taxes shall be quoted separately for all items.

   4.5 The prices quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.

   4.6 The Prices should be quoted in Indian Rupees only.

5. Each bidder shall submit only one quotation for one complete package. The bidder may submit separate quotation (as separate bid document) for each of the package advertised. The package wise detailed specification is available on the institute website https://www.dce-darbhanga.org/teqip-iii/tenders/ **and also attached here for the reference.**

6. Quotation shall remain valid for a period not less than **60** days after the last date of quotation submission.

7. Evaluation of Quotations,

   The Purchaser will evaluate and compare the quotations determined to be substantially responsive i.e. which

   7.1 are properly signed ; and

   7.2 confirm to the terms and conditions, and specifications.

8. The Quotations would be evaluated for all items together.

9. Award of contract:

   The Purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive and who has offered the lowest evaluated quotation price.

   9.1 Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.

   9.2 The bidder whose bid is accepted will be notified of the award of contract by the Purchaser prior to expiration of the quotation validity period. The terms of the accepted offer shall be incorporated in the purchase order.

10. Payment shall be made in Indian Rupees as follows:

    Delivery and Installation - 90% of total cost

    Satisfactory Acceptance - 10% of total cost

11. You are requested to provide your offer latest by **16:00** hours on **12-Aug-2019.**
12. Detailed specifications of the items are at Annexure I.
13. Training Clause (if any): **Yes, as per the requirements of individual item that will be notified in PO while awarding the contract.**
14. Testing/Installation Clause (if any) **Yes.**
15. Information brochures/ Product catalogue, if any must be accompanied with the quotation clearly indicating the model quoted for.
16. Sealed quotation to be sent through speed post/registered post/courier only to the following address:

    Darbhanga College of Engineering, Darbhanga, Mabbi, Post - Lal Sahpur, VIA - PTC, Darbhanga – 846005, Bihar.

    The Tender ID, Package code and Package name must be written on top of the envelope of the bid document.

17. The bidder must mention the details of prior requirement for the installation and commissioning of the items quoted. A separate sheet with item wise requirements in a tabular form may be submitted.
18. Payment will be made only after the successful completion of set milestones and the adequate fund allocation from NPIU under TEQIP-III project.
19. Principal, Darbhanga College of Engineering, Darbhanga, reserves the rights to accept the lowest or any tender and also of rejecting all or any tender without assigning any reason for the same.
20. The entire dispute with regard to the contract of purchase of items/packages will be subject to Legal jurisdiction of Darbhanga only.
21. The Dealer must have Annual Turnover of Rs. 1 (One) Crore or more for last 3 consecutive years. Copy of Balance Sheets and PL statements must be submitted with the Bid.
22. The Bidder / Authorised Dealer / Manufacturer whosoever is submitting the tender must have at least 3 years' experience of successful execution of contracts of similar nature to Central /

State Govt. Departments / Organizations / Technical Institutions / TEQIP-III Institutions. Relevant Proofs (Order Copies) must be attached with the Bid.

23. The Bidder must have valid PAN / GST No., Copy of which must be attached.
24. The Bidder must submit last 3 years ITR.
25. Bidder should be OEM/Authorized Dealer of the OEM.
26. Bidder should have Signed and Stamped Authorization from the OEM for all machines.
27. The Original should be shown during the demonstration.
28. The bidder should have executed/ implemented such type of work/ supply order at any govt. institutions/ central and state universities/ IIT/ NIT/ PSU/ Research Organisation. The firm should have at least two orders minimum of Rs. 9 lakhs or a single order of Rs. 12 lakhs. The bidder should furnish the information supported by purchase order or work completion certificates from the concerned department/ institution.
29. Technical Demonstration of Products has to be given in during Technical evaluation on the suggested date & time.
30. Only one opportunity will be given to all the bidders for demonstrating their products.
31. All Bidders are required to demonstrate all the quoted models displaying all the technical capabilities of the products as asked within two / three days of Bid opening.
32. Only those Bidders who will successfully demonstrate all their products as asked & meet all the Bid eligibility criteria conditions shall be considered for award of contract.
33. WARRANTY: On Site Warranty will be for 2 year for all the products from the date of Installation.
34. Certificate to the effect is required to be submitted by the bidder undertaking that the “price quoted is not more than the cost of the equipment (with same / similar specifications)” which was sold to other Govt. organizations, Universities and institutions during last one year.
35. The bidder should provide undertaking regarding installation / commissioning, and after sales service of the instruments and training/ demonstration to at least two persons of the Lab/Department of the institution.
36. The bidders should submit the proof of supplying the Mechanical Lab items to the reputed institutions like IIT/NIT/TEQIP III funded colleges in the last three years.

37. The Manufacturer should have trained and qualified customer support staff with ample experience in the required field. The details of the same should be provided.

38. The bidder should arrange for pre dispatch inspection of the machine before the final delivery if suggested by the department/institution.

39. The bidder should furnish detailed technical description and original literature of the Machine.

40. The bidder should provide details of service centre in Bihar or around distance is 200 km from our college and information on service support facilities/escalation service matrix that would be provided after the warranty period.

41. The bidder should submit the proof that the manufacturer Authorization, ISO/CE Certificate.

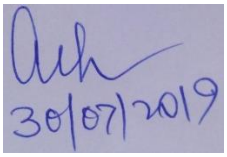
42. The bidder has to submit an affidavit that his firm has not been blacklisted by the State Govt./ Central Govt.

43. The quotation submitted must contain mandatory information such as GSTN, HSN code, Bifurcation of CGST & SGST, Taxable value and invoice value, etc.

44. Preference will be given to:
    - The bidders possessing relevant certification by authorized body such as ISO etc.
    - The bids that have quoted the items certified for standard, quality and safety such as BIS, ISI etc.

45. The bidders must provide separate technical and financial bids.

46. We look forward to receiving your quotation and thank you for your interest in the project.



Principal-cum-IPD
TEQIP-III, DCE Darbhanga

FORMAT FOR QUOTATION SUBMISSION

(In letterhead of the supplier with seal)

Date: _____

To:

_____

_____

Sl. No.	Description of goods (with full Specifications)	Qty.	Unit	Quoted Unit rate in Rs. (Including Ex Factory price, excise duty, packing and forwarding, transportation, insurance, other local costs incidental to delivery and warranty/ guaranty commitments)	Total Price (A)	Sales tax and other taxes payable	
						In %	In figures (B)
Total Cost							

Gross Total Cost (A+B): Rs. _____

We agree to supply the above goods in accordance with the technical specifications for a total contract price of Rs. ————————— (Amount in figures) (Rupees —————————amount in words) within the period specified in the Invitation for Quotations.

We confirm that the normal commercial warranty/ guarantee of ————————— months shall apply to the offered items and we also confirm to agree with terms and conditions as mentioned in the Invitation Letter.

We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf will engage in bribery.

Signature of Supplier

Name: _____

Address: _____

Contact No: _____

DARBHANGA COLLEGE OF ENGINEERING

MECHANICAL ENGINEERING DEPARTMENT

Design Lab

1. **Package Name: ME P2**

   Package Code: TEQIP- III/BH/dced/307

S. No.	Detailed specification of the instruments / equipment	Qty.
1.	**Brinell cum Rockwell Hardness Testing Machine** This is a combined hardness testing machine used to measure hardness of metals & alloys of all kinds, hard or soft, whether round, flat or irregular in shapes. Rockwell & Brinell method is used for checking hardness on metals & alloys of all kinds Brinell hardness is also checked on non-ferrous materials like Cast iron, Aluminum, etc. Automatic weight selection with automatic zero setting dial gauge. Rockwell test minor load is 10 kgf & major loads are 60,100,150 kgf. Brinell test for major load is 187.5 & Rockwell hardness scales such as HRA, HRB, HRC, etc. Brinell hardness scale such as HB is obtained by using different types of indentors (Diamond / Ball). Test height x Throat is – 215 x 132 mm. Should be supplied measuring instrument with capability of Data Logging with BLE 4.0 wireless transmission, having flashlight function lightens and support NCV non-contact voltage sense ❖ Test Loads (Kgf) 60, 100, 150 (Rockwell) 187.5, 250 (Brinell) ❖ Initial Loads (Kgf). 10 ❖ Max. Test Height (mm) 295 ❖ Depth of Throat (mm) 295 ❖ Size of Base (mm) (Approx.) 475 x 220 ❖ Machine Height (mm) 865 ❖ Nett Weigth (kg.) (Approx.) 125 ❖ 2.5 mm Steel Balls 5 No. ❖ 5 mm Steel Balls 5 No. Standard Accessories **1)** Flat Table of 50 mm Dia. 1 No. **2)** Vee Table for Specimen - 50 mm Dia. 1 No. **3)** Diamond Indentor 1 No. **4)** 2.5 mm Ball Indentor 1 No. **5)** 5 mm Ball Indentor 1 No. **6)** 1/16'' Ball Indentor 1 No. **7)** Rockwell Hardness Test Block 1 No. **8)** Brinell Hardness Test Block 1 No. **9)** Instruction Manual 1 Book	1

	10) 2.5 mm Steel Balls 5 No. **11)** 5 mm Steel Balls 5 No. **12)** 1/16" Steel Ball 5 No. **13)** Brinell Microscope 1 No.	
2.	**<u>Bending and Deflection Apparatus</u>** The bench mounted apparatus has a steel base with support at ends. The supports can be fitted with knife edges or clamp plates. A steel beam and two load hangers are supplied together with two dial gauges for measuring beam deflections and slopes. This equipment is part of a ranged to both, demonstrate and experimentally confirm basic engineering principles. Great care has been given to each item so as to provide wide experimental scope without unduly complicating or compromising the design. Each piece of apparatus is self-contained and compact. Setting up time is minimal, and all measurements are made with the simplest possible instrumentation, so that the student involvement is purely with the engineering principles being taught. A complete instruction manual is provided describing the apparatus, its application, experimental procedure and typical test results.	01
3.	**<u>Strain Measurement using strain gauge</u>** Parameter Measured: Strain in terms of Kilograms on a cantilever beam Measurement System: Physical by Weights and Transducer with electronic instrumentation Transducer: Temperature compensated strain gauges Type: Cu-Ni foil with polyamide carrier base Gauge Resistance: 350 Ohms (Nominal) Gauge Length: 6 mm Gauge Width: 2.4 mm Gauge Base: 12.5 mm x 4.3 mm Gauge Factor: 2:1 (approx) Transducer: Strain gauges mounted on a stainless steel cantilever beam Configuration: Bridge with two arms as strain gauges Wheatstone Bridge principle Range: 0 – 500 grams or above Actual Strain: By weights placed in a plate fixed on the beam Excitation Source: DC Regulated source Span Adjustment: By potentiometer control Zero (Tare) Adjustment: By a ten turn potentiometer control Readout: Digital display to indicate strain in kilograms Test Points: Multi colored test points provided Indicator: Mains ON/OFF Power Requirements: 230V, 10% AC, 50 Hz, 1phase Standard Accessories: Detailed Instruction Manual, Should be supplied measuring instrument with capability of Data Logging with BLE 4.0 wireless transmission, having flashlight function lightens and support NCV non-contact voltage sense	01

4.	**Models of different Mechanisms** **1)** Inversion Of Four Bar Mechanism **2)** Inversion Of Single Slider Crank Mechanism **3)** Inversion Of Double Slider Crank Mechanism	2 Set
5.	**Universal speed governor apparatus** **Universal Governor** Consisting of Watt, Porter, Hartnell and Proell Governor (a) Drive Unit: DC motor 1/4 H.P. 0-1500 RPM 220 V DC. (b) Speed control unit working on single phase AC 230 V supply. (c) Belt and pulley system to give spindle speed 100 to 400 rpm. (d) Governor mechanisms with necessary springs and weights	1 set
6.	**Static and Dynamic Balancing apparatus** Specification: • Drive Motor – F.H.P. Universal motor. • Balancing Weights – 6 nos. with different sized drills for varying the unbalance • Cord and container system with precision steel balls for relative weight measurement. Range of Experiments: • Static Balancing of system using steel balls. • Dynamic balancing of a simple rotating mass system. • Observation of effect of unbalance in a rotating mass systems	1

PRODUCTION LAB

2. Package Name: ME P3

Package Code: TEQIP- III/BH/dced/308

S.No.	Detailed specification of the instruments / equipment	Qty.
1.	**Optical Microscope** Inverted Trinocular Metallurgical Microscope Vision Plus ❖ Viewing Head: Trinocular Observation head conveniently inclined at 45˚. ❖ Focusing: Co – axial focusing module with slides travelling on bearing guide ways. ❖ Mechanical Stage: Large graduated mechanical stage with low drive co – axial controls for X – Y movements on ball slides. ❖ Objectives :Achromatic flat field metallurgical ❖ corrected and anti – mount fungus M4x, ❖ M10x, M20x & M40x. ❖ Eyepieces :Compensating High eye point wide field ❖ eye piece 10x . ❖ Magnification: 40x to 400x. ❖ Illumination: Incident light through Epi – illuminator ❖ 12V-50W with field aperture diaphragm and filter slot. Continuously variable ❖ Luminosity control though built in Electronic transformer. ❖ Filters: Green & Blue **Digital USB Camera:** ❖ 5.0 megapixel color CMOS Sensor, ❖ Size: 1/3’’, ❖ Pixel Size: 8x8 Micron ❖ Resolution: 1280x1024 ❖ Interface: with PC ❖ Color Depth: 30Bit ❖ Exposure Time: 1 Microsecond to 2 second ❖ Capable for digital camera change image in to digital signal & send it to Touch Screen PC **Image Analysis Software** Capable for measurement to all the micrographic method used to test metal & metallic products, **1. Grain Size:** ASTM E112, capable for supported method : Planimeter, linear	01

	Intercept, Circular Intercept, & manual process **2. Phase Segmentation:** Capable for support up to 5 Phase. Area & percentage of each are detected based on gray-scale setting. **3. Graphite Flakes:** ASTM A27, Capable for both automatic & manual process. Give the distribution (A, B, C, D, E) & Size of graphic Formations. **4. Nodularity:** capable for measured automatically. Systems to be supports user to set circularity cut off of feature & also allow the user for manual over-ride of the result **5. Porosity:** capable for measured automatically. **6. Decarburization:** ASTM E 1077, Capable for support trace method & total decarb method. 7. Software Capable for basic dimensional measurement, (length, area, angle, diameter, radius) 8. Capable for supports Drawing line, circle, arc, angle, curve. 9. Capable for support report generation in PDF or Excel. 10. Capable Supports measurement of multiple samples/Field for each analysis Result. **Grain Size Eyepiece:** Capable with 10x Objective. Fitted with a rotating turret having eight Standard ASTM & JIS Grain Size Chars. **Micrometer Eye Piece:** 10x Eye piece with graticule glass scale showing 10mm, divided in to 100 parts. **Object Micrometer Slide:** 1mm, Scale on glass slide, Divide din to 100 parts. Eye Piece: W.F.: 20x Paired Supply measuring instrument with capability of Data Logging with BLE 4.0 wireless transmission, having flashlight function lightens and support NCV non-contact voltage sense **Note:** Microscope, Digital Camera, Image Analysis Software, Eyepiece, & Micrometer Should Be Same Manufacturer For Optimum Compatibility & Better Performance.	
2.	**<u>Surface Roughness Tester</u>** ❖ World's most popular portable surface roughness tester ❖ User-friendly with 2.4" Colour Graphic backlit LCD display ❖ Advanced data storage & facility to use Micro-SD card ❖ Extensive analysis & display - SJ210 complies with JIS, VDA, ISO & ANSI ❖ standards Displays calculation results, assessed profiles ❖ Wide range of detectors & optional accessories available for different **<u>Brief Specifications</u>** 2. 1. Measuring Range: X axis: 17.5mm, Z axis (detector): 360µm 2. Cut-off lengths (λc): 0.08, 0.25, 0.8, 2.5mm 3. Roughness Parameters: Ra, Rc, Ry, Rz, Rq, Rt, Rmax, Rp, Rv, R3z,	02

	Rsk, Rku, 4. RPc, Rsm, Rz1max, S, HSC, RzJIS, Rppi, RΔa, RΔq, Rlr, Rmr, Rmr(c), Rδc, Rk, Rpk, Rvk, Mr1, Mr2, A1, A2, Vo, Rpm, tp, Htp, R, Rx, AR, 5. Possible Customize 6. Resolution: 0.002µm **Supply complete with Standard accessories** ❖ Connecting cable ❖ Roughness specimen ❖ Carrying case ❖ Calibration stage ❖ Protective sheets for display ❖ AC adaptor ❖ Operation manual ❖ Quick reference manual Warranty	
3.	**<u>Micrometer And Telescopic Gauge</u>** **Outside Micrometer** : Range 0 to 25 mm, accuracy: ±2µm, graduation: .010mm, measuring faces: carbide, .6 µm flatness and 2.4 µm parallelism **Telescopic gauge**: Range 8 mm to 150mm Six Gauge Set Constant spring force on measuring surface	06
4.	**<u>TIG Welding Apparatus</u>** **TIG+ ARC WELDING EQUIPMENT** ❖ Input Voltage V Single Phase ❖ Capacity: 200A ❖ Frequency Hz 50/60 ❖ Input Current A 21 ❖ Output Current Range A 10~200 ❖ Rated Output Voltage V 18V ❖ Duty Cycle % 60 ❖ Efficiency % 85 ❖ Power factor 0.93 ❖ Insulation class B ❖ Protection class IP23 ❖ Weight (Approx.) 9 Kg **Machine should be** TIG/MMA available, ❖ low cost & good quality ❖ HF arc-starting, ignition reliable. ❖ Arc force adjustable ❖ Can weld mild steel, stainless, copper, titanium etc. ❖ Enable to use all kinds of electrode Supply complete set with Torch, Regulator, Hose Clamp, Hose Pipe Copper Holder with Copper Cable, Earth Clamp with Copper Cable, with cylinder. Should	01

	be supplied measuring instrument with capability of Data Logging with BLE 4.0 wireless transmission, having flashlight function lightens and support NCV non-contact voltage sense	
5.	**MIG Welding Apparatus** **Mig Welding Machine** ❖ Capacity: 250A ❖ Input voltage vac 1 phase ac 380 v + 15% 50/60 hz ❖ Input current a 14 ❖ Rated power supply kva 9.2 ❖ Arc welding current adjustment range a 50-250 ❖ Duty cycle % 60 ❖ Power factor 0.93 ❖ Efficiency % 85 ❖ Weight (approx.) Kg 26 ❖ Insulation class mm f ❖ Projection class ip21 ❖ Welding wire diameter mm 0.8 **TECHNICAL CHARACTERISTICS** ❖ IGBT Inverter technology, current-mode control, reliable quality, stable performance ❖ Closed loop feedback control, constant voltage output ❖ Controlled by electronic reactor, stable welding arc, little spatter, deep penetration, beautiful shaping, high welding efficiency ❖ Slow wire feeding during arc starting; remove the tip ball after welding, reliable arc starting small size, and light weight, simple operation, economical and practical. ❖ Great reduction in magnetic loss obviously enhances the welding efficiency and energy saving effect ❖ Adjustable welding voltage, precisely matching the welding current, excellent welding characteristics ❖ Switching frequency is beyond audio range, which almost eliminates noise pollution 8. Preset welding voltage, the voltmeter displays the preset voltage ❖ Welding current and welding voltage can be observed during welding ❖ Adjustable burn-back time ❖ 2T/4T available, convenient for long-time welding. ❖ The wire feeder is separated from the power source, which enlarges the welding operation scope Supplier should be supplied along with one box of MIG wire, Torch, Regulator, Flow Meter, Hose Clamp, Hose Pipe Copper Holder with Copper Cable, Earth Clamp with Copper Cable, with gas cylinder. Should be supplied measuring instrument with capability of Data Logging with BLE 4.0 wireless transmission, having flashlight function lightens and support NCV non-contact voltage sense	01

6.	**Surface Grinder** HORIZONTAL SURFACE GRINDER M/C. with longitudinal & cross feed of table manual, duly fitted with 1 HP motor AC/440v.2880rpm for drive of grinding head & push button starter, complete with other std. access. such as: guard for grinding wheel, chuck size as per machine specification, clamping bolts, tool holder & spindle locking spanner, machine having grinding capacity is 350x110,mm or more . **Feature:** Sturdy construction Durability Compact design All main parts such as column, wheel head, table, saddle and machine base are provided with heavy & study design to give higher rigidity of the machine. All Hand wheel, levers, Switches are conveniently grouped at the front of the machine for convenient operation of the machine. All sides ways and electrical switch box are sealed from dust, chips and coolant for easy maintenance and longer life of the machine. Hydraulic power unit and coolant tank are separated from the machine. Wheel, spindle rotates in grease packed angular contact rolling element bearing and directly driven by the motor through a flexible coupling.	01
7.	**Pedastal Grinder** Grinding wheel 250x25x32mm x mm x mm Speed 2800 rpm, diameter 200- 400 mm, Voltage 220V Net Weight (approx.): 400 kg as per is standard	02
8.	**Dynamometer(Cutting Force Measurements)** This is a strain Gauge Type two/three component Lathe Tool Dynamometer designed to measure vertical & horizontal/(radial force in case of three component) forces on tool during cutting process. The unit consists of a mechanical sensing unit or tool holder and digital force indicator. With this dynamometer, students can study the change in these forces due to change in speed, feed and depth of cut. **Specifications -** • Mechanical Sensing Unit with Tool Holder and Tool with strain Gauges mounted on it. • Digital Force Indicator - two/three channel, to read both forces simultaneously. • Balancing Potentiometer for initial balancing • Range - 0 to 200 Kg, least count - 1 Kg. Should be supplied measuring instrument with capability of Data Logging with BLE 4.0 wireless transmission, having flashlight function lightens and support NCV non-contact voltage sense	02
9.	**Radial Drilling Machine** Features: **1)** Fabrication Table for the Machine **2)** Milling Adaptor Attachment for the Machine **3)** Coolant Pump with Fitting **4)** Coolant tank for Pump **5)** Machine Lamp	01

	6) Rotary Table **7)** Drill Chuck with Key & Arbor **8)** Drill Sleeve **9)** Drill Vice **10)** Special T-Bolts **11)** Foundation Bolt Drill depth 1500 mm or more, rpm 40-1800 or more, Power 2 – 5 kw or more, Maximum drilling diameter 30 mm or more , Table size 200x300 mm^2 to 500x 700mm^2 or more , Range of spindle speed 5 to 800 rpm or more, Number of spindle speed 3-12 steps or more	

WORKSHOP LAB

3. Package Name: ME P4

Package Code: TEQIP- III/BH/dced/309

S.No.	Detailed specification of the instruments / equipment	Qty.
1.	**Solder Torch** As per IS standard	01
2.	**Brazing Torch** As per IS standard	01
3	**Gas Welding Apparatus** Supplied with complete Welding Helmet, Hand Screen, Black Glass, White Glass, Cable Clamp ,Welding holder Chipping Hammer ,Wire Brush ,,Oxygen Regulator, D. A. Cylinder with regulator ,Cutting torch , Welding torch, Hand Screen, Flame Nipple (any size), Welding goggles , Apron (Leather) ,Filler wire M.S.,Flux ,Electrode , Welding cable 20 meters , Hand Gloves , M. S. Plate (4mm),M. S. Plate (8mm), Acetylene horse pipe- 12 meters, Oxygen Horse Pipe- 12 meters, Supply complete with Oxygen cylinder 7 cubic meter and Acetylene cylinder 5 cubic meter. Should be supplied measuring instrument with capability of Data Logging with BLE 4.0 wireless transmission, having flashlight function lightens and support NCV non-contact voltage sense	01
4.	**Hand Blower** Material Cast iron; weight approximately 4 kg with isi standard	01
5.	**Muffle Furnace** (Maximum Temp. 1200 deg.C Working Temp. 1150 deg.C.). Size: 100x100x225mm.(4"x4"x9") Power: 1.6 K.W.	01
6.	**Autocollimator** Focal length: 287 mm, Clear aperture: 25 mm, readout: micrometer, resolution: 3 sec, accuracy over 1 minute range: 6 sec, accuracy over full range: 30 sec, measurement axis: single range of measurement: ±30 minutes, magnification:16x,	01

	field of view: 60 minutes, max working distance @ half field view: 3 m, illumination: LED, power: 220 V, 50 Hz; overall length: 365 mm, weight: 4 Kg Consists of a) Autocollimator Single Axis Micrometer readout Resolution: 3 secs (15 microns/meter) Range of Measurement: +/-30 minutes: Max working Distance: 3 m; Clear Aperture: 25 mm Centre Height: 85 mm b)Horizontal Stand with leveling screws c)Standard Reflector of 60 mm clear aperture; Flatness: Lambda/6:Model SMR Should be supplied measuring instrument with capability of Data Logging with BLE 4.0 wireless transmission, having flashlight function lightens and support NCV non-contact voltage sense	
7.	**Power Hacksaw with Adjustable Blade** Power Hacksaw 18" Heavy Duty 2 Wheels for easy movement Flexible cutting fluid nozzle Auto cut off at completion of cut Hydraulic blade support Top arm lubrication reservoir Cutting fluid reservoir visu gauge SPECIFICATIONS Cutting Capacity: 130 x 180mm Rectangular, 180mm Round 90mm @ 45 Degrees Blade Size: 400 x 25 x 1.25mm Stroke Length: 110 to 160mm Adjustable Stroke Rate: 95/Min Coolant Tank Capacity: 5L Motor: 2 HP 3 Phase Mitre Angle on Vice: 0 to 45 Degrees Weight: 120Kg Net / 140 Kg Gross (approx.) Supply with adjustable blade : qty : 05 Should be supplied measure.ing instrument with capability of Data Logging with BLE 4.0 wireless transmission, having flashlight function lightens and support NCV non-contact voltage sense	01
8.	**<u>Robot</u>** **Specifications** • No of axis = 5 + Gripper (wrist rotate included) • Servo motion control = local closed loop • 1 x HS-485HB in the base • 1 x HS-805BB (or equivalent large scale servo) in the shoulder • 1 x HS-755HB in the elbow • 1 x HS-645MG in the wrist • 1 x HS-422HB in the gripper • Lift weight (arm extended) = approx. 11 oz • Weight = 32 oz	01

	• Range of motion per axis = 180 degrees • Accuracy of motion per axis = 0.09 degrees (with SSC-32U) • Servo voltage = 6V DC • Wrist rotate option includes 1x HS-422 Servo Motor • Assembly Guides are provided online • Flow Arm PLTW compatible with Windows XP SP2 (with .NET Framework), Windows 7, and Windows 8. Requires internet connection. • Minimum requirements for Windows XP: 2 GHz (single core), 1 GB RAM, and 1024x768 resolutions. Supply complete with Robotic Arm Combo Kit, Medium Duty Wrist Rotate Upgrade Kit w/ servo, SSC-32U servo controller board, USB cable, 12" Servo Extension Cable, FlowArm PLTW graphical interface software	