



# KAZI NAZRUL UNIVERSITY

Nazrul Road, Kalla More, P.O. – Kalla C. H.  
Asansol – 713340, Dist.-PaschimBardhaman, West Bengal  
www.knu.ac.in

## NOTICE INVITING TENDER

Ref.No.: KNU/R/MIN/NIT-01/60/2020-21

Date:09/01/2020

### Request for Proposal (RFP) through E-TENDER platform

KAZI NAZRUL UNIVERSITY (KNU) intends to procure instruments/equipment for Mining Engineering Department at Asansol through Online eTender. The tentative quantity of the required items along with technical configuration of each items are mentioned.KNU is looking for interested bidderswhohaveexperienceinsupplyingofabovetypeofinstrumentsandmayfollowthe instructionsagivenbelowforsubmissionoftheirtendersunderonlinemode.

1. GeneralInstructions:

Intending bidder may download the tender documents from the website <https://wbtenders.gov.in> directly with the help of Digital Signature Certificate. Last date of submission is **29.01.2020** at 12hrs.Bid opening time **03.02.2020** at 12 hrs.

2. Submission of bids:

Both Technical bid and Financial Bid are to be submitted concurrently duly digitally signed by the Company personnel who is in the pay roll of the Company (having Authorization from the Company management) in the website <http://wbtenders.gov.in>. All papers must be submitted in English language.

3. TimeSchedulesforthee-tender:

The Time Schedule for obtaining the Bid Documents, Pre Bid meetings, the submission of bids and otherdocumentsetc.willbeasperthelistprovidedinClauseNo.10givenbelow.

4. Eligibility forQuoting:

Manufacturers or Dealers/Distributors/Agents duly authorised by the manufacturers who are able to supply the assured quantities as per requirement & have requisite Annual Average Turnover, as per clause no. 5, are only eligible for quoting. Manufacturers not having the capability to supply the required quantity solely need not apply. Failure of submission of declaration of full supply will lead to cancellation of tender. Further, vendors who were declared black listed and/or insolvent by any Govt.Concern/anyInstitutionsintheCountryforparticularitemoritemsarenoteligible to participateinthecurrenttenderforthatitemoritems.

5. Annual Turnover Requirements:

Vendor having average annual Turn Over more than Rs30 lakh in India or equivalent foreign currency in the respective foreign country for the year 2015-16, 2016-17 &2017-18areeligible toparticipateintheTender.

6. Submission of Tenders

6.1. General process of submission

Tenders are to be submitted online through the website stated in Clause 1. All the documents uploaded by the Tender Inviting Authority form an integral part of the contract. Tenderers are required to upload all the tender documents along with the other documents, as asked for in the tender, through the above website within the stipulated date and time as given in the Tender. Tenders are to be submitted in two folders at a



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time, one is Technical Bid and the other is Financial Bid. The tenderer shall carefully go through the documents and prepare the required documents and upload the scanned documents of originals in Portable Document Format to the portal in the designated locations/folders of Technical Bid. He needs to fill up the BOQ in the designated cell and upload the same in designated location of Financial Bid. The documents uploaded are virus scanned and digitally signed using the Digital Signature Certificate (DSC). Tenderers should specially take note of all the addendum/corrigendum related to the tender till the bid submission ends. Tenderers should in general upload the latest documents as part of the tender, however, in case of failure in uploading such documents, it will be deemed that they (tenderers) have taken note of such latest documents including addendum/corrigendum, if published till the bid submission ends.

## 6.2. Technical Bid

The Technical Bid should contain scanned copies and/or declarations in the following standardized formats in two folders:

### I. Technical File (Statutory Cover) containing:

1. Annexure
  - a) Basic Information (Vide Annexure I) (to be submitted in "Annexure" folder)
  - b) Application for Tender (Vide Annexure II) (to be submitted in "Annexure" folder)
  - c) Authorization letter (Vide Annexure III) (to be submitted in "Annexure" folder)
  - d) Affidavit Proforma (Vide Annexure IV) (to be submitted in "Annexure" folder)
  - e) DECLARATION ON KNU (Vide Annexure V) (to be submitted in "Annexure" folder)
2. Technical details of the Items Quoted (Bidders must submit Technical specification along with Catalogue of the item quoted in "Technical Details" Folders).
3. Bidder must submit Audited Balance Sheet and Profit and loss Account for last 3 (three) financial year namely 2016-17, 2017-18 & 2018-19 in "Accounts" folder.

**Note: Tenders will be summarily rejected if any item in the statutory cover is missing.**

### II. My Document (Non-Statutory Cover) containing as follows:

Sl.No.	Category	Sub-Category	Sub-Category Description
1	Certificates	Certificates	PAN Card of the Bidder
			GST Registration Certificate
2	Company Details	Company Details 1	Trade License/Enlistment Certificate/License for Electrical works (Mandatory for Electrical installation work)
			Registration with Registrar of Companies (if any)
			Memorandum of Articles for Limited Companies (if any)



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3	Credential	Credential 1	a) Copy of the purchase order for supplying similar nature of items at least for last 2 years in an Institute of Higher Learning b) Brief User List preferably for users in West Bengal in an Institute of Higher Learning
4	Financial Information	Payment Certificate 1	Income Tax Returns submitted for the financial year 2016-17, 2017-18, 2018-19
		Payment Certificate 2	GST Returns for the year 2017-18, 2018-19

### 6.3. Financial Bid

The Financial Bid should contain Bill of Quantities (BOQ) in one cover (folder): Proforma (Don't quote here)

Sl. No.	Items	Specification	Rate (INR) A	Quantity B	Total (INR) = A*B	GST amount @....% C	Amount (INR) D={A*B+(A*B*C)}
1	Metric Chain	<ul style="list-style-type: none"> <li>Length: (30 m±5 mm )</li> <li>Chains are made of galvanized mild steel wires bent into rings at the ends and joined each other by three small circular or oval wire rings, which provides flexibility.</li> <li>Small Brass rings provided at every one meter length except where tallies are attached.</li> <li>Tallies fixed at every five-meter length and marked with 'm'.</li> <li>Provided with Brass handle at each end with swivel joint.</li> <li>Confirming IS: 1492-1970</li> </ul>		6			
2	Engineering Chain	<ul style="list-style-type: none"> <li>Length: 100 feet</li> <li>No. Of links: 100</li> <li>Length of each link: 1 foot</li> <li>At every 10 links, brass tags are fastened, which notches on the tags indicating the numbers of 10 link segments between the tag and end of the chain</li> </ul>		2			
3	Metallic Tape	<ul style="list-style-type: none"> <li>Length: 30m</li> <li>Width: 12-15 mm</li> <li>Made up of varnished strip of waterproof linen interwoven with very fine brass, copper or bronze wires.</li> <li>Brass rings attached to the outer ends of the tape and fastened to it by a metal strip of same width as the tape</li> <li>Outer ends are reinforced by a strip of leather or suitable plastic material of the same width as the tape, for a length of at least 20 cm.</li> <li>Tapes are supplied in a metal case fitted with a winding device.</li> </ul>		6			
4	Arrow	<ul style="list-style-type: none"> <li>Length: 300-400mm</li> <li>Diameter: 4 mm</li> <li>Made up of good quality hardened and tempered steel wire and black enamelled/galvanised</li> <li>One end is made sharp and other end is bent into a loop of 50 mm diameter.</li> </ul>		10			



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5	Ranging Rod	<ul style="list-style-type: none"> <li>• Length: 2 m</li> <li>• Diameter: 3 cm</li> <li>• Made up of mild steel in circular cross-section and 15 cm long shod at bottom</li> <li>• Painted in alternative bands of red and white in succession each band being 20 cm deep.</li> </ul>		10			
6	Pegs	<ul style="list-style-type: none"> <li>• Length: 15 cm</li> <li>• Cross section: 3 cm X 3 cm</li> <li>• Made of stout timber of Sishum or Babul</li> </ul>		15			
7	Open Cross Staff with M.S. Pole	<ul style="list-style-type: none"> <li>• Made up of a metallic head</li> <li>• Consisting 4 vertical metal vanes so arranged that the two sight lines cross each other at right angles</li> <li>• Provided with a central conical socket to set up with M.S. Pole</li> </ul>		3			
8	Optical Square	<ul style="list-style-type: none"> <li>• Consists of a circular box about 5 cm in diameter made of good quality metal having three slits, 1.25 cm deep.</li> </ul>		3			
9	Prismatic Compass	<ul style="list-style-type: none"> <li>• Made of good quality brass and glass cover</li> <li>• Full wooden rigid or all aluminium telescopic stand having ball socket joint.</li> <li>• Size: 150 mm diameter</li> <li>• Graduation: 0 degree at South end, 90 degree at West, 180 degree at North and 270 degree at East</li> <li>• A suitable prism fitted below the eye slit having suitable focusing arrangement, having sunglass and normal glass</li> <li>• One vertical object vane and one eye vane both having fine slit with vertical hair</li> </ul>		3			
10	Plane Table	<ul style="list-style-type: none"> <li>• Board Size: 750mm x 600mm x 22 mm</li> <li>• Made up of superior quality seasoned wood, hard plane and smooth top</li> <li>• Having arrangements for stand, levelling, rotation about vertical axis and clamping in any required position</li> <li>• <b>Accessories:</b> Brass alidade light weight, Aluminium Trough, Magnetic Compass, Spirit Level, Plumbing Fork, Plumb Bob and other essential tools.</li> </ul>		3			
11	Digital Planimeter	<ul style="list-style-type: none"> <li>• Type: Roller type with computing function.</li> <li>• Display: Liquid Crystal, 8-digit figures. 10 symbols.</li> <li>• Symbol: Batt-E, SCALE, MEMO, HOLD, cm<sup>2</sup>, m<sup>2</sup>, km<sup>2</sup>, in<sup>2</sup>, ft<sup>2</sup>, acre.</li> <li>• Converting\ Function: Unit and scale value.</li> <li>• Accumulated measuring value: Maximum 10 m<sup>2</sup> (scale 1:1).</li> <li>• Measuring Range : Maximum vertical width: 325 mm Horizontal roller rotating length: 30 m.</li> <li>• Accuracy: Within <math>\pm 0.2\%</math> (within <math>\pm 2/1000</math> pulses)</li> <li>• Power Supply: Built-in NiCd</li> <li>• Storage Battery (rechargeable through AC adapter).AC 100V, 120V, 220V and 240V, (using the supplied AC adapter) (provided with auto power-off function)</li> <li>• Operating Duration: Approx. 30 hours of continuous operation.</li> <li>• Main Unit Weight: 750 gm</li> </ul>		1			



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		<ul style="list-style-type: none"> <li>• Accessories: Supplied AC adapter and plastic case.</li> </ul>				
12	Auto level	<p><b>Telescope:</b></p> <ul style="list-style-type: none"> <li>• Image: Erect</li> <li>• Magnification: 24x</li> <li>• Minimum Focus Distance: 1.0 m</li> <li>• Stadia Ratio / Constant. : 100 / 0</li> <li>• Accuracy : 2mm</li> </ul> <p><b>Compensator:</b></p> <ul style="list-style-type: none"> <li>• Type : Magnetic</li> <li>• Working Range: 15'</li> <li>• Dust/Water Protection: IP-54</li> </ul> <p><b>Accessories:</b></p> <ol style="list-style-type: none"> <li>1. Leveling Staff: 2nos. (5m)</li> <li>2. Wooden Telescopic Tripod: 1no.</li> <li>3. Carrying case: 1 no.</li> <li>4. Plum bob: 1no.</li> <li>5. User Manual: 1 no.</li> </ol>		4		
13	Digital Theodolite	<p><b>Telescope:</b></p> <ul style="list-style-type: none"> <li>• Image: Erect</li> <li>• Magnification: 30x</li> <li>• Aperture: 45 mm</li> <li>• Minimum Focus Distance: 1.35 m</li> <li>• Field of View: 1° 30'</li> <li>• Stadia Ratio / Constant. : 100 / 0</li> </ul> <p><b>Optical Plummet:</b></p> <ul style="list-style-type: none"> <li>• Image: Erect</li> <li>• Magnification.: 30x</li> </ul> <p>Angle Measuring System:</p> <ul style="list-style-type: none"> <li>• Minimum Reading: 1" or 5"</li> <li>• Accuracy : 2"</li> </ul> <p><b>Display:</b> Dual, Large Character, Backlit LCD</p> <p><b>Dust/Water Protection:</b> IP-54</p> <p><b>Accessories:</b></p> <ol style="list-style-type: none"> <li>1. Wooden Telescopic Tripod: 1no.</li> <li>2. Carrying case: 1 no.</li> <li>3. Plum bob: 1no.</li> <li>4. Tool Kit: 1 no.</li> <li>5. User Manual: 1 no.</li> </ol>		2		
14	Vane Anemometer	<ul style="list-style-type: none"> <li>• Consists of a small windmill with 8-10 vanes set at an angle of 40° to 45° to the direction of airflow.</li> <li>• Diameter of the dial : 100-115 mm</li> <li>• Velocity range : 0-15 m/s</li> <li>• Weight : 0.4-0.8 kg</li> <li>• May have an arrangement of auto shutdown after 1 minute</li> <li>• Accessories: Carrying Case, Correction Table</li> <li>• Make: Lambrecht meteo/Standard brand</li> <li>• <b>The instrument is used for measuring velocity in underground mines and not to be confused with electronic velometer</b></li> </ul>		3		
15	Kata	<ul style="list-style-type: none"> <li>• Consists of an alcohol thermometer with a large bulb of 4cm</li> </ul>		2		



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	Thermometer	long and 2cm in diameter and a stem 20cm long, graduated only at two points namely 38°C and 35°C. • The Bulb is surrounded by a wet muslin cloth.					
16	Pitot Tube	• Consists of two concentric tubes, in which the inner one measures the total pressure and the outer one measures the static pressure. • Construction : Stainless steel • Velocity range : 0-25 m/s • Length : 0.50 m		4			
17	Assman Psychrometer	• Scale : 0°C to 50°C • Aspiration (approx) : 3.5m/s to 6 m/s • Fan : Spring-wound • Continuous operation : About 8 minutes per wind • Dimensions (approx) : 255 X 110 X 60mm • Weight (approx) : 1.5-2.0 Kg.		1			
18	Whirling Hygrometer	• Consists of two thermometers with least count 0.5°C, mounted side by side in a plastic/wooden frame. One revolving handle is fixed to the frame in such a manner that the instrument can be rotated smoothly at about 3 to 4 revolution per second to have an air speed of atleast 4 m/s past the bulbs. • One of the thermometer has its bulb covered with a single layer of thin cotton fabric • Range : 0°C to 50°C • Supplied with a leather cover.		3			
19	Portable Inclined Manometer	• Pressure range : 0-250 mm wg • Velocity range : 0-28 m/s • Accuracy : +/- 1% of range in use • Provision of leveling arrangement should be there in the instrument. • Two connecting PVC/rubber tubing of 9m length and a bottle of manometer fluid with the density labeled on it and a funnel for topping up the reservoir fluid, should be provided.		2			
20	Electronic Velometer	• Velocity range : 0.4-30.0 m/s; Resolution : 1 m/s • Accuracy : +/- 2 % of range in use • Operating Temperature : 0°C to 50°C • Humidity : Max 80% RH • Sensor Structure : Conventional vane arms and low friction ball bearing design • Power Supply : DC 9V battery (Heavy Duty Type) • Weight : 325 gm (Approx.)		1			
21	Magnehelic	• Pressure range : 0-100 mm wg • Accuracy : +/- 2% of range in use • Supplied with 100 m rubber tubing and one pocket thermometer and levelling (with two spirit level) and carrying case.		2			
22	Digital Manometer	• Pressure range : 0-1500 mm wg • Display : 10 mm 4 digit LCD • Power : 9 V alkaline battery • Weight : 100-500 gm • Pressure Ports: Two connectors for 8 mm I.D. flexible tubing.		2			



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		<ul style="list-style-type: none"> <li>Supplied with a carrying case and connecting tubes</li> </ul>				
23	Digital Sound Level Meter	<ul style="list-style-type: none"> <li>Display : 18 mm 3.5 digit LCD</li> <li>Sound range : 80-130 db</li> <li>Resolution : 0.1 db</li> <li>Accuracy : 0.7 db - after calibration</li> <li>Power : DC 9V battery (Heavy Duty Type)</li> <li>Dimension : 205×80×35 mm (Approx.)</li> <li>Weight : 250-300gm</li> <li>Supplied with a carrying case</li> </ul>		1		
24	Digital Lux Meter	<ul style="list-style-type: none"> <li>Display : 13 mm LCD</li> <li>Range : 0-50,000 Lux</li> <li>Resolution : 10 Lux</li> <li>Accuracy : +/- 5 % of range in use</li> <li>Weight : 150-300gm</li> <li>Supplied with a carrying case</li> </ul>		1		
25	DGMS approved Digital Methanometer	<ul style="list-style-type: none"> <li>Range : 0-5 % v/v CH<sub>4</sub></li> <li>Operating Time: 12 hr with fully charged battery</li> <li>Weight : 0.4-0.5 Kg</li> <li>Temperature range : 0°C to 50°C</li> <li>Pluggable sensor minimum life 05 years</li> <li>Digital display with backlight facility, audio visual signal / alarm if percentage of methane exceeds 1.25% in general body of air and must have rechargeable battery with power backup for minimum 12 hrs with minimum 02 yrs life with a guarantee for free replacement within 02 years and must be housed in a leather case with shoulder strap.</li> <li>The instrument should have provision of telescopic attachment with aspirator for remote sampling.</li> </ul>		1		
26	Multi Gas Detector (5 Gases- O <sub>2</sub> , CO <sub>2</sub> , NO <sub>2</sub> , CO and H <sub>2</sub> S)	<ul style="list-style-type: none"> <li>Make: Drager/Standard brand</li> <li>Sensor range:               <ul style="list-style-type: none"> <li>0-5% v/v CO<sub>2</sub></li> <li>0-25% v/v O<sub>2</sub></li> <li>0-2000 ppm CO</li> <li>0-100 ppm H<sub>2</sub>S</li> <li>0-100 ppm NO<sub>2</sub></li> </ul> </li> <li>Weight: 220-250 g</li> <li>Temperature: - 20 to + 50°C (-4 to 122°F)</li> <li>Pressure: 700 to 1300 mbar (20.7 to 38.4 inch Hg)</li> <li>Relative humidity: 10 to 95 % RH</li> <li>Protection class: IP 67</li> <li>Alarms:               <ul style="list-style-type: none"> <li>Visual: 360 degree</li> <li>Audible: Multi-tone &gt; 90 dB at 30 cm</li> </ul> </li> <li>Operating time: &gt; 12 h</li> <li>Charging time: &lt; 4 h</li> </ul>		1		
27	Orsat Apparatus	<ul style="list-style-type: none"> <li>Standard</li> </ul>		1		
28	Haldane Apparatus	<ul style="list-style-type: none"> <li>Standard</li> </ul>		1		



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29	Fire extinguisher (foam extinguisher type)	<ul style="list-style-type: none"> <li>• Throw of jet maintained: 35 Seconds</li> <li>• Range of jet : 6 m</li> <li>• Empty weight: Approx. 7 kg</li> <li>• Full weight: Approx. 16 kg</li> <li>• Fire rating: 3A, 21B</li> <li>• Working pressure: 15 kgf/cm<sup>2</sup></li> <li>• Hydro pressure: 35 kgf/cm<sup>2</sup></li> <li>• Bursting pressure: 55 kgf/cm<sup>2</sup></li> <li>• Warranty: 5 years</li> </ul>		1			
30	Fire extinguisher (CO <sub>2</sub> extinguisher type)	<ul style="list-style-type: none"> <li>• CO<sub>2</sub> Valve type fire extinguisher: 4.5 kg</li> <li>• Discharge time: Minimum 13 Sec</li> <li>• Discharge time: Controllable</li> <li>• Range: 2 m</li> <li>• Test pressure: 250 kgf/ cm<sup>2</sup></li> <li>• Operating valves: Wheel/Squeeze grip type</li> <li>• Fire rating: 21B, C</li> <li>• Operating temperature: -30 degree to 55 degree</li> </ul>		1			
31	Fire extinguisher (water extinguisher type)	<ul style="list-style-type: none"> <li>• Type: Cartridge</li> <li>• Material: CO<sub>2</sub> cartridge and AFF foam</li> <li>• Size: 50 litre</li> <li>• Total Weight: 85 kg</li> <li>• Application: Suitable for class A, B type fire</li> <li>• Features: Trolley mounted suitable for flammable control discharge mechanism, Cartridge fitted outside.</li> </ul>		1			
32	Fire extinguisher (Dry powder extinguisher type)	<ul style="list-style-type: none"> <li>• Capacity (kg/litre): 14.9</li> <li>• Range/Throw: 6 to 7 m</li> <li>• Type of fire: AB, A, B, C</li> <li>• Expellant: External gas cartridge</li> <li>• Minimum effective discharge: 85%</li> <li>• Hydraulic pressure: 30 kgf/cm<sup>2</sup></li> </ul>		1			
33	Self-contained oxygen breathing apparatus (45 min)	<ul style="list-style-type: none"> <li>• High capacity light in weight respirator (Approx. 9.5 kgs fully charged).</li> <li>• Ergonomically designed to fully protect the rescue staff to carry out their emergency functions</li> <li>• Full isolated protection of the users in the atmosphere which is harmful to the respiratory system</li> <li>• Excellent cooling system, for long term use in the elevated temperatures</li> <li>• Duration: 45 min</li> <li>• DGMS Approved</li> </ul>		1			
34	Self rescuer (60 mins)	<ul style="list-style-type: none"> <li>• Closed circuit breathing apparatus for single use with chemically bound oxygen</li> <li>• Developed for permanent carrying in mines and has a weight of only 3 kgs</li> <li>• Incorporates a starter to start within few seconds and guarantees reliable protection for breathing in case of emergency</li> <li>• A moisture indicator is also incorporated the system</li> <li>• Operational duration: Minimum 60 minutes</li> <li>• Manufactured in complete compliance to EN-13794:2002 and</li> </ul>		1			





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		IS:15803-2008 • DGMS Approved				
35	LED Cap lamp with single type charger	<ul style="list-style-type: none"> <li>• Battery Voltage: 3.7 V</li> <li>• Battery Capacity: 5A</li> <li>• Discharge Time: 16 Hours</li> <li>• Lux at distance of 1 m: &gt;6000 Lux</li> <li>• LED Bulb Voltage: 3.6V</li> <li>• LED Bulb current: 350mA</li> <li>• LED Bulb Life: &gt;50,000 Hours</li> <li>• Weight of Cap Lamp: 0.550 kg</li> <li>• Life of Battery: 1100 cycles</li> <li>• DGMS Approved</li> </ul>		2		
36	Anchorage Testing Machine	<ul style="list-style-type: none"> <li>• Cylinder capacity: 30 Tones or more</li> <li>• Stroke: 65 mm or more</li> <li>• Pressure rating: 700 Bar</li> <li>• Steel hydraulic hand pump</li> <li>• 6 m hydraulic heavy duty fire resistant and anti-static hose, conforming to BC-174-1992 specification</li> <li>• Should have clamping device for testing of roof bolts and cable bolts.</li> </ul>		1		
37	Telescopic Convergence Indicator	<ul style="list-style-type: none"> <li>• Consists of an outer and inner light weight and durable fiber body tube.</li> <li>• A scale with 1 mm least count, is present on the inner tube.</li> <li>• A reflecting tape should be present to enable easy viewing in low light conditions</li> </ul>		2		
38	Gas Sampling Equipment	<ul style="list-style-type: none"> <li>• Winchester Sampling bottle (2 liter or more) and tube (250 cc) should be made from corning glass</li> <li>• Sampling tube available with 2-way or 3-way stop cock</li> <li>• Should be supplied with aspirator bulb</li> </ul>		1		
39	DGMS approved Resuscitator	<ul style="list-style-type: none"> <li>• Tidal Volume: 200 - 1100 ml</li> <li>• Automatic flowrate: 12 - 39.6 l/m</li> <li>• Demand Breathing flowrate: 0-120 l/m</li> <li>• Manual Ventilation flowrate: 12 - 39.6 l/m</li> <li>• Patient Volume Dead Space: 8 ml</li> <li>• Weight (Approx.): 0.45 kg</li> </ul>		1		
40	First Aid Cabinet (all in one)	<ul style="list-style-type: none"> <li>• It should give a fully stocked first aid kit with all accessories as per Mines Act/Rules, a folding stretcher and a blanket plus space for optional equipment and supplies.</li> </ul>		1		
41	Methane Gas Testing Chamber	<ul style="list-style-type: none"> <li>• Should have robust construction with Teak Wood consisting of clear glass in all four sides to have a clear view for 3-4 trainees at a time.</li> <li>• Size: Length-12" Breadth-12" Height-18" (Leg attached with best quality rubber buffer).</li> <li>• Comprised with LP Gas Cylinder, Gas Pipe, Regulator, Gas Socket a complete Gas Cap Indicator Wooden Box including 1 No. Velox GL7 Gas Testing Flame Safety Lamp. HS CODE:- 98010014</li> </ul>		2		
42	"Velox" GL7 (Modified) Gas Testing flame	<ul style="list-style-type: none"> <li>• The lamp should be incorporated with a novel measuring scale of pin indicator for clear reading of Methane percentage &amp; Fixed filament unit (Relighting Type) - approved by D.G.M.S Dhanbad for</li> </ul>		2		



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	safety Lamp	All Degree Gassy Mines/Seams. HS CODE:- 98010014					
43	"Velox" GL50 Gas Testing Flame Safety Lamp	<ul style="list-style-type: none"> <li>The lamp should be incorporated with integral extinguisher (non-relighting type)- approved by D.G.M.S. Dhanbad for All Degree Gassy Mines/Seams. HS CODE:- 98010014</li> </ul>		4			
44	Magnet Unlocker	<ul style="list-style-type: none"> <li>As per HS CODE 8505 of J. K. Dey and Sons</li> </ul>		1			
45	Outer Gauge for Velox GL7 (Modified) Safety Lamp	<ul style="list-style-type: none"> <li>As per Part No 10A of J. K. Dey and Sons</li> </ul>		2			
46	Inner Gauge for Velox GL7 (Modified) Safety Lamp	<ul style="list-style-type: none"> <li>As per Part No 15A of J. K. Dey and Sons</li> </ul>		2			
47	Glass Cylinder for Velox GL7 (Modified) Safety Lamp	<ul style="list-style-type: none"> <li>As per Part No 20 of J. K. Dey and Sons</li> </ul>		2			
48	Outer Gauge for Velox GL50 Safety Lamp	<ul style="list-style-type: none"> <li>As per Part No E10A of J. K. Dey and Sons</li> </ul>		2			
49	Inner Gauge for Velox GL50 Safety Lamp	<ul style="list-style-type: none"> <li>As per Part No E15A of J. K. Dey and Sons</li> </ul>		2			
50	Glass Cylinder for Velox GL50 Safety Lamp	<ul style="list-style-type: none"> <li>As per Part No E20 of J. K. Dey and Sons</li> </ul>		2			
51	Wick	<ul style="list-style-type: none"> <li>As per Part No E45 of J. K. Dey and Sons</li> </ul>		1			
52	Gasket	<ul style="list-style-type: none"> <li>As per Part No E35 of J. K. Dey and Sons</li> </ul>		1			
53	Fixed Filament Unit (modified)	<ul style="list-style-type: none"> <li>As per Part No 67A of J. K. Dey and Sons</li> </ul>		4			
54	Tool Box Kit for service & maintenance	<ul style="list-style-type: none"> <li>As per Part No E96 of J. K. Dey and Sons</li> </ul>		1			
55	Protodyakonov Strength Apparatus	<ul style="list-style-type: none"> <li>Testing Cylinder: Steel hollow</li> <li>Cylinder internal diameter: 77 mm</li> <li>Plunger: Flat bottom drop weight of 2.4 kg and 66 mm dia; dropping height 65 mm</li> <li>Volumeter: Consists of steel tube and piston, internal dia of steel tube is 23 mm, calibrated from 0 – 160 mm screen – consists of screen size 0.5 mm</li> </ul>		1			
56	Unconfined Compression Test Apparatus for Rocks	<ul style="list-style-type: none"> <li>Loading Frame: 200 kN capacity, 12 speed and two pillar type. The loading frame is designed for conducting various tests on rocks like Unconfined compressive strength, Shear strength, Triaxial strength etc.</li> <li>Should consist of proving ring (100-200 kN), triaxial cells, constant pressure system for rocks and electronic instrumentation for rocks.</li> </ul>		1			



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57	Core cutting and grinding machine	<ul style="list-style-type: none"> <li>The unit should cut and grind cylindrical rock specimens up to NX size. The outfit includes 200mm diameter diamond impregnated cutter, a fine diamond impregnated grinding wheel, a water supply system and sample holder</li> <li>A V-Vice should be provided to hold the sample upto 55 mm dia x 140 mm long to be cut parallel and square to the longitudinal axis. Cores longer than 140 mm can be prepared by reversing the specimen and holding the same vice.</li> <li>A hand feed arrangement should be provided to facilitate the specimen with a uniform and smooth feeding motion</li> <li>The machine should cut rock/coal cores to standard size as per ISRM norms for different tests like: Unconfined compressive strength, Triaxial strength, Point Load test, Slake Durability test etc.</li> </ul>		1			
58	Core Drilling Machine	<ul style="list-style-type: none"> <li>Heavy duty, pillar type frame.</li> <li>Varying cutting feeds provided with water-fed swivel head which can be connected to suitable water supply</li> <li>Provision at base for water collection.</li> <li>Should prepare core from regular and irregular samples (Core size: EX to 100mm).</li> <li>Clamping arrangement to hold specimens with regular/ irregular shapes to the base of machine.</li> <li>Water tank: 5 ltr</li> <li>Suitable for operation on 220 V, single phase, AC supply.</li> <li>Supplied with 4 core drilling bits (NX, BX, AX &amp; EX size)</li> </ul>		1			
59	Polishing & Lapping Machine	<ul style="list-style-type: none"> <li>The unit should be provided with a 1/4 HP, single phase, AC motor.</li> <li>This bench mounted, single spindle lapping machine is ideally suited for the final polishing of mounted rock or concrete specimens.</li> <li>This should be a motor driven unit with 450/500 rpm.</li> <li>A swing-in tap, for continuous water supply during operation, should also be provided.</li> <li>Suitable for operation on 220 V, 50 Hz, Single Phase, AC supply</li> <li>Should consist of Sample Holder for different sizes</li> </ul>		1			
60	Point Load Index Tester	<ul style="list-style-type: none"> <li>Should conform to Ref. Standard - IS:8764</li> <li><b>Loading Frame:</b> <ul style="list-style-type: none"> <li>The frame shall be sufficiently rigid and shall be so designed that the load application is in plumb.</li> <li>The distance between the top and the bottom bearing plates of this frame shall accommodate a hydraulic jack, two loading platens and platen to platen clearance for testing of rock specimens in the range of 15-100mm. The platens should be of hard materials such as tungsten carbide or hardened steel so that they remain undamaged during frequent testing.</li> </ul> </li> <li><b>Hydraulic Jack and Accessories:</b> <ul style="list-style-type: none"> <li>The ram shall have low friction seals. The friction between the ram and the jack shall be less than 50 N (5 kgf).</li> </ul> </li> <li><b>Distance Measuring System:</b></li> </ul>		1			



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		<ul style="list-style-type: none"> <li>The distance measuring system, a direct reading scale is fitted to permit measurement of the distance 'D' between specimen platen contact points. Measurements of 'D' should be to an accuracy of <math>\pm 2</math> percent of D or better irrespective of the size of specimen tested.</li> <li>The measuring system should allow a check of the 'zero displacement' value when the two platens are in contact, and should preferably include a zero adjustment.</li> <li>An instrument such as digital calipers should be provided to measure the width of specimens for the diametrical test.</li> </ul> <p><b>Loading Platens:</b></p> <ul style="list-style-type: none"> <li>Loading platens shall be conical with 60° angle and the radius of curvature of the cone truncation shall be 5 mm. The 60° cone and the 5 mm radius spherical truncation shall meet tangentially. The tip portion of the platens to a height of up to 10 mm from the tip shall be of hard steel (high carbon-high chromium steel or tool steel).</li> </ul>					
61	Slake Durability Apparatus	<ul style="list-style-type: none"> <li>Should conform to Ref. Standard - IS: 10050</li> <li>Test drums comprised of a 2.0 mm (No. 10) standard square-mesh cylinder of unobstructed length of 100 mm and diameter 140 mm, with a solid fixed base. The drum shall have solid removable lid. The drum and plates must be sufficiently strong to retain their shapes during use. The drum shall be able to withstand a temperature of <math>110 \pm 5^\circ</math> C.</li> <li>A trough to contain the test drum supported with a horizontal axis in a manner capable of being filled with water to a level 20 mm below the drum axis and which shall allow at least 40 mm unobstructed clearance between the through and the bottom of the mesh.</li> <li>A motor drive capable of rotating the drum at a speed of 20 rpm (constantly to within 5 per cent for a period of 10 minutes).</li> </ul> <p>Accessories:</p> <ol style="list-style-type: none"> <li>Oven (thermostatically controlled, capable of maintaining a temperature of <math>110 \pm 5^\circ</math> C for a period of at least 12 hours and supplied with 2 nos. of trays.)</li> <li>Weighing balance (sensitive to 0.5 g and having a 2000 g capacity)</li> <li>Brush for cleaning rocks and wire baskets</li> <li>Rock hammer</li> </ol>		1			
62	Brazilian Test Apparatus	<ul style="list-style-type: none"> <li>Should conform to Ref. Standard - IS:10082</li> <li>The instrument should be designed to test specimens from 50 mm dia to 100 mm dia having thickness equal to half of the diameter for determination of Indirect Tensile Strength.</li> <li>A pair of loading jaws, designed so as to contact a disc shaped sample at diametrically opposed surfaces over an arc of contact of about 10 degrees at failure, should be supplied.</li> <li>The set of jaws supplied with the equipment should be designed for 50-54 mm dia specimen.</li> <li>A set of plain platens should be provided with the jack to enable</li> </ul>		1			



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		testing of cube and circular specimen upto 50-54 mm size for compressive strength.					
63	Direct Shear Apparatus	<ul style="list-style-type: none"> <li>• Should conform to Ref. Standard : ASTM D-5607-95, IS 12634</li> <li>• The equipment should be used to determine direct shear strength of Rock Samples in Laboratory.</li> <li>• The test measures peak &amp; residual Direct Shear Strength as a function of stress normal to the sheared plane.</li> <li>• The equipment can be used for testing Core, Lump specimens.</li> <li>• The Equipment should consist of:            § Shear Box (Size 300mm x 300mm x 100mm): 1 no.            § Jack Capacity 100 kN: 3 nos. a) One jack for normal Load b) One jack for Shear Load c) One jack to return the sample to original position            § Dial Gauges (25mm x 0.01mm): 6 nos. a) 2 nos for measurement of Shear Displacement b) 4 nos for normal displacement &amp; consolidation of sample            § Hand operated Hydraulic Pump: 2 nos.            § Load Gauge (0-100 kN x 0.5 kN): 2 nos.            § Flexible hose pipe (2 m): 3 nos.            § Moulds for casting samples (Wooden): 2 nos.</li> </ul>		1			
64	Flat Jack Outfit	<p>The equipment should consist of :</p> <ul style="list-style-type: none"> <li>• Flat Jack (30 cm x 30 cm): 1 no</li> <li>• Hand Operated Hydraulic Pump with 15 cm dial Pressure Gauge of 70 kg/cm<sup>2</sup> capacity with flexible Pressure Pipe of 1 m length: 1 no.</li> <li>• Deformeter consisting of a Dial Gauge having 10 mm travel and 0.002 mm least count and two interchangeable stems for 150 mm and 250 mm gauge length: 1 set.</li> <li>• Standard Bar: 1 no.</li> <li>• Reference Pins: 6 nos.</li> </ul>		1			
65	Friction or Koepe Winding System Model (Tower Mounted Winder)	<ul style="list-style-type: none"> <li>• The model should show the basic features of a single-rope tower mounted Koepe winder with cages on a vertical downcast shaft. An aluminium member made 4 legged headgear with its usual construction and fittings like a ladder and platform at top; should be mounted on a high table over a G.I. Sheet made shaft. The single rope Koepe Pulley should be mounted on the platform at headgear top, showing its constructional features and the deflection pulley should be fitted at a lower level on the headgear. The model should also comprise pit-top and pit-bottom track layouts adjacent to shaft, two aluminium made cages with their usual fittings are hung from two ends of a single winding rope by suspension gears, a balance rope fixed beneath two cages, eight rope guides, shaft fence, stop-blocks and three coal tubs. Working of the winding system can be demonstrated by rotating the Koepe Pulley by a handle. Model should be duly labeled by paint.</li> <li>• Dimension: 1.22m×0.65m×2.0m(H) (Approx.)</li> </ul>		1			
66	Mechanized Colliery Surface Layout Model	<ul style="list-style-type: none"> <li>• The model should show the usual surface arrangements of a mechanized colliery with two coal and man winding shafts. The different structures and machineries should be made of steel,</li> </ul>		1			



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		<p>aluminium, acrylic sheet, ply and timber and these should be mounted on a big table duly stepped to represent ground profile. The model should comprise upcast and downcast shafts with their headgears, winding drums, 4 cages with their suspension gears, whereby function of safety hook on overwinding can be demonstrated, eight rope guides in each shaft, two air-lock covers for two cages of upcast shaft, pit-top tub track layouts at both shafts with two coal tubs, two tipplers, two bunkers, four belt conveyors, one coal screening plant, railway siding track, ventilation fan house, lamp room, office, canteen and workshop. Model should be duly labeled by paint.</p> <ul style="list-style-type: none"> <li>• Dimension: 2.5m×1.7m×1.3m(H) (Approx.)</li> </ul>				
67	Single Drum Direct Rope Haulage Layout Model	<ul style="list-style-type: none"> <li>• The model should show the layout of a single drum direct rope haulage at an inclined haulage road in a coal gallery. It should comprise coal pillars, a manhole, haulage signal wires, main haulage track with two branch tracks, safety devices like stop-block, runaway switch, backstay and buffer. A set of two coal tubs, haulage rope and single haulage drum operated by a handle should make the model working. There should be sliding transparent sheet covered windows at gallery roof to show interior details and to operate the model. The model should be duly labeled by paint.</li> <li>• Dimension: 2.0m×0.52m×0.73m(H) (Approx.)</li> </ul>		1		
68	Endless Rope Haulage Layout Model	<ul style="list-style-type: none"> <li>• The model should show the layout of an over-rope type endless rope haulage at a level haulage road in a coal gallery. It should comprise coal pillar, a manhole, haulage signal wire, two tracks – one for full and one for empty tubs, clifton pulley operated by a handle to move the endless haulage rope, guide pulley, return pulley mounted on a high frame to make this an over-rope type haulage, rope tension arrangement by tension bogie and weight, lashing chains and four coal tubs. There should be sliding transparent sheet covered windows at gallery roof to show interior details and to operate the model. The model should be labeled by paint.</li> <li>• Dimension: 2.44m×0.54m×0.58m(H) (Approx.)</li> </ul>		1		
69	Mechanized Opencast Coal Mine Model	<ul style="list-style-type: none"> <li>• The model should give a concept and overall layout of a mechanized opencast coal mine at an advanced stage. Relevant provisions of Coal Mines Regulations should be followed as far as practicable. The model should show top soil surface at sides, benches in overburden of soil and in sandstone, coal bench, barriers at boundaries, overburden dump with reclaimed land, inclined coal seam, decoaled area, appropriate slope angles of different benches and barriers and overburden dump, haul road, ramps, gradients at different places and fence around workings. The model should also be supplied with various opencast machines viz. shovel, dumper, drill, pump etc. The model should be multi-coloured to make itself explanatory and will be covered by transparent sheets. The model should be profusely labeled by paint.</li> </ul>		1		



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		<ul style="list-style-type: none"> <li>• Dimension: 1.75m×1.75m×0.70m(H) (Approx.)</li> </ul>					
70	Depillaring Working Model in a Bord and Pillar Panel layout	<ul style="list-style-type: none"> <li>• The model should show Bord and Pillar depillaring workings in a panel which should show – whole and splitted pillar, stook, rib, goaf, systematic supports by prop, bar and chock, diagonal line of extraction, sequence of extraction indicated by letters and numbers on pillars and stooks, system of ventilation by stopping, brattice etc., haulage road, travelling road, tramming road, panel barrier, face pump, SDL/LHD etc. The model should be covered by transparent sheet and profusely labeled by paint.</li> <li>• Dimension: 1.45m×1.22m×0.3m(H) (Approx.)</li> </ul>		1			
71	Longwall Advancing Face with Sand Stowing Model	<ul style="list-style-type: none"> <li>• The model should show a mechanized longwall advancing face with sand stowing arrangements and layout of the adjacent area in the panel. The model should show the longwall advancing face with virgin coal on the inbye side and worked out area i.e. goaf on the outbye side in the panel, main and tailgate roads and two stables with roof supports by chocks and bars on hydraulic props, armoured flexible conveyor fitted with spillplate, trough for cable and hydraulic duct and rackatrack, stage loader mounted on track, gate belt conveyor, track for material supply and energy train containing power pack, switch gears, DERD with drums having spiral lacing of picks and sprocket for hauling the machine on rackatrack in cutting position at face, shield support, hydraulic ram, face pump, spraying water pipe for shearer, sand stowed goaf, barricade for stowing and layout for stowing pipe. The model should be covered by transparent sheet and profusely labeled by paint.</li> <li>• Dimension: 1.44m×1.22m×0.55m(H) (Approx.)</li> </ul>		1			
72	Longwall Retreating Face with Caving Model	<ul style="list-style-type: none"> <li>• The model should show a mechanized longwall retreating face with caving and layout of the adjacent area in the panel. The model should show the longwall retreating face with virgin coal on the outbye side and worked out area i.e. goaf on the inbye side in the panel, main and tailgate roads with roof supports by bars on hydraulic props, armoured flexible conveyor fitted with spillplate, trough for cable and hydraulic duct and rackatrack, stage loader mounted on track, gate belt conveyor, track for material supply and energy train containing power pack, switch gears, DERD with drums having spiral lacing of picks and sprocket for hauling the machine on rackatrack in cutting position at face, shield support, hydraulic ram, face pump, caved in goaf and spraying water pipe for shearer. The model should be covered by transparent sheet and profusely labeled by paint.</li> <li>• Dimension: 1.4m×1.3m×0.65m(H) (Approx.)</li> </ul>		1			
73	Mining Wire Ropes	<ul style="list-style-type: none"> <li>• Samples of wire ropes generally used for mining purposes e.g. locked coil rope, multi-strand rope, round strand rope, guide rope etc. should be loosely placed on brackets in a showcase with transparent sheets on its three sides. Ropes should be cut transversely on one side to show cross-section and labeled by paint showing their construction.</li> <li>• Dimension: 56cm×39cm×12cm (Approx.)</li> </ul>		1			



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74	Colliery Cables	<ul style="list-style-type: none"> <li>• Samples of electric cables as used in gassy collieries e.g. armoured cable, trailing cable, telephone etc. should be loosely placed on brackets in a showcase with transparent sheets on its three sides. Cables should be cut transversely on one side to show cross-section and labeled by paint showing their construction.</li> <li>• Dimension: 56cm×39cm×12cm (Approx.)</li> </ul>		1			
75	Sieve shaker with sieves	<ul style="list-style-type: none"> <li>• Gantry - Tap Type</li> <li>• 20 cm dia 6 nos brass sieves (4.75 mm, 3.35 mm, 2.36 mm, 1.70 mm, 1.40 mm and 1.00 mm)</li> </ul>		1			
76	Roll Crusher	<ul style="list-style-type: none"> <li>• Max. Feed Size: (-) 12.5 mm</li> <li>• Discharge Size: (-) 3.5 mm</li> <li>• Complete with Motor, Automatic Starter, V Belt etc</li> </ul>		1			
77	Jaw crusher	<ul style="list-style-type: none"> <li>• Jaw Size: 10" X 6"</li> <li>• Max. Size of Feed: 50 mm (Approx.)</li> <li>• Discharge Size: 5 mm to 12.5 mm (Adjustable)</li> <li>• Capacity: 200 Kg per hour</li> <li>• Complete with min. 3 Hp Motor, Automatic Starter, V Belt etc</li> </ul>		1			
78	Digital Balance	<ul style="list-style-type: none"> <li>• 10 Kgs Capacity</li> </ul>		1			
79	Streak plates	<ul style="list-style-type: none"> <li>• Dimensions: 5cm x 5cm x 1cm</li> </ul>		1			
80	Single bladed hardness testing knives	<ul style="list-style-type: none"> <li>• Standard</li> </ul>		1			
81	Clinometer Compass	<ul style="list-style-type: none"> <li>• Standard</li> </ul>		1			
82	Brunton Compass	<ul style="list-style-type: none"> <li>• Standard</li> </ul>		1			
83	Geological Hammer	<ul style="list-style-type: none"> <li>• Standard drop forged steel</li> </ul>		1			
84	Pocket Lens	<ul style="list-style-type: none"> <li>• Standard with 10X zoom, Bakelite Body</li> </ul>		1			
85	Hand Specimen of Mineral Samples	<ul style="list-style-type: none"> <li>• One sample each (Biotite, Muscovite, Chalcopyrite, Bauxite, Chromite, Sphalerite, Zincblende, Graphite, Galena, Fluorite, Hematite, Magnetite, Calcite, Dolomite, Fluorspar, Gypsum, Mica, Barytes)</li> <li>• Properly labeled and packed individually</li> <li>• Approx. size: 5 x 7 cm and should be complete with plastic display tray having the arrangement to display the name of the specimen.</li> </ul>		18			
86	Hand Specimen of Igneous Rock Sample	<ul style="list-style-type: none"> <li>• One sample each (Basalt, Granite, Diabase, Pegmatite, Obsidian, Gabbro, Diorite, Dacite, Pumice, Rhyolite)</li> <li>• Properly labeled and packed individually</li> <li>• Approx. size: 6 x 8 cm and should be complete with plastic display tray having the arrangement to display the name of the specimen.</li> </ul>		10			
87	Hand Specimen of Sedimentary Rock Samples	<ul style="list-style-type: none"> <li>• One sample each (Sandstone, Shale, Chert, Flint, Rock Salt, Siltstone)</li> <li>• Properly labeled and packed individually.</li> <li>• Approx. size: 6 x 8 cm and should be complete with plastic display tray having the arrangement to display the name of the specimen.</li> </ul>		6			





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88	Hand Specimen of Metamorphic Rock Samples	<ul style="list-style-type: none"> <li>• One sample each (Marble, Slate, Gneiss, Schist, Quartzite, Amphibolite)</li> <li>• Properly labeled and packed individually.</li> <li>• Approx. size: 6 x 8 cm and should be complete with plastic display tray having the arrangement to display the name of the specimen.</li> </ul>		6			
89	Animal Fossils	<ul style="list-style-type: none"> <li>• One sample each (Max. 5 different types)</li> <li>• Properly labeled and packed individually.</li> </ul>		5			
90	Plant Fossils	<ul style="list-style-type: none"> <li>• One sample each (Max. 5 different types)</li> <li>• Properly labeled and packed individually.</li> </ul>		5			
91	Different Type of Maps for Mining Geology Labs	<ul style="list-style-type: none"> <li>• Map of Rock type of India (Size: 54 x 88 cms framed)</li> <li>• Contour Charts printed on rexine (Size: 125 x 100 cm with wooden rollers Part –I &amp; Part II )(set of 2)</li> <li>• Rock and Mineral Map of India (Size: 70 x 100 cm laminated with rollers)</li> <li>• Mineral Map of India (Size: 70 x 100 cm laminated with rollers)</li> <li>• Chart Distribution of Earthquake (Size: 125 x 100 cm printed on rexine)</li> <li>• Chart Distribution of Volcano (Size: 125 x 100 cm printed on rexine)</li> <li>• Chart Activity of Volcanoes (Size: 125 x 100 cm printed on rexine)</li> <li>• Physiographic Map of India (Size: 54 x 88 cm framed)</li> </ul>		1			
92	Digital Multimeter	<ul style="list-style-type: none"> <li>• LCD Display: 22000 counts</li> <li>• True RMS Multimeter</li> <li>• Auto Ranging Facility</li> <li>• 46 segments Analogue Bar graph</li> <li>• DC Voltage Range: 220mV, 2.2V, 22V, 220V, 1000V</li> <li>• AC Voltage Range: 220mV, 2.2V, 22V, 220V, 750V</li> <li>• DC Current: 220<math>\mu</math>A, 2200<math>\mu</math>A, 22mA, 220mA, 10A</li> <li>• AC Current: 220<math>\mu</math>A, 2200<math>\mu</math>A, 22mA, 220mA, 10A</li> <li>• Resistance Range: 220ohm to 220Mohmin 7 ranges</li> <li>• Capacitance Range: 22nF, 220nF, 2.2<math>\mu</math>F, 22<math>\mu</math>F, 220<math>\mu</math>F, 2.2mF, 22mF, 220mF</li> <li>• Frequency Range: 10Hz to 220MHz</li> <li>• Diode Test: Yes, should be available</li> <li>• hFE Test: Yes, should be available</li> <li>• Continuity Test: Yes, beeper</li> <li>• PC Interface: RS-232C Interface</li> </ul>		2			
93	Multiple Output DC Power Supply	<ul style="list-style-type: none"> <li>• 3 channel DC output</li> <li>• Output Voltage (CH1 &amp; CH2): 0 to 32V DC</li> <li>• Output Current (CH1 &amp; CH2): 0 to 3A</li> <li>• CH3 output Voltage: 5V</li> <li>• CH3 Output Current: 5A</li> <li>• It should have Tracking Series Voltage: 0 to 64V</li> <li>• It should have Tracking Parallel Current: 0 to 6A</li> <li>• Line Regulation CV: <math>\leq 0.01\%+3mV</math></li> <li>• Load Regulation CV: <math>\leq 0.01\%+3mV</math></li> <li>• Ripple &amp; Noise CV: <math>\leq 1mVrms</math></li> </ul>		2			



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		<ul style="list-style-type: none"> <li>• Line Regulation CC: <math>\leq 0.2\% + 3\text{mA}</math></li> <li>• Load Regulation CC: <math>\leq 0.2\% + 3\text{mA}</math></li> <li>• Ripple &amp; Noise CC: <math>\leq 3\text{mArms}</math></li> <li>• It should have single switch operated Series/Parallel operation</li> <li>• Setting &amp; Read Back Resolution 100mV/10mA</li> <li>• 4.3 inch LCD Display</li> <li>• Output On/Off Facility</li> <li>• Key Lock Function</li> <li>• Set View Function for Checking an Original V/I Setting During Output On</li> </ul>					
94	30 MHz, 2 Channel Arbitrary Function Generator	<ul style="list-style-type: none"> <li>• Output Channels: 2 Nos Equivalent Performance Arbitrary Chanel (1<math>\mu</math>Hz to 30MHz or more)</li> <li>1 No Pulse generator Channel 1<math>\mu</math>Hz to 25MHz or more</li> <li>• Frequency Range: Sine (1<math>\mu</math>Hz - 30MHz or more), Square (1<math>\mu</math>Hz - 25MHz or more), Triangle/Ramp (1<math>\mu</math>Hz – 1 MHz or more)</li> <li>• Frequency Resolution: Minimum 1<math>\mu</math>Hz</li> <li>• Amplitude Range: 1mVpp to 10 Vpp (into 50 ohm)</li> <li>• Amplitude Resolution: 0.1mV or 4 digits or better</li> <li>• Offset Range: <math>\pm 5</math> Vpk AC +DC (into 50 ohm)</li> <li>• Arbitrary Function: Should be Built in</li> <li>• Sample Rate: 200MSa/Sec or better</li> <li>• Repetition Rate 100MHz</li> <li>• Waveform length: 16k points or more</li> <li>• Amplitude Resolution: 14 bit or better</li> <li>• Pulse generator Channel: Frequency 1<math>\mu</math>Hz to 25MHz or more</li> <li>• Pulse Amplitude: 1mVpp to 2.5 Vpp (into 50 ohm)</li> <li>• Pulse Width: 20nS to 999.9ks</li> <li>• Variable Duty Cycle: 0.01% to 99.99%</li> <li>• Internal Modulation: AM,FM,PM, SUM, PWM, FSK, Sweep, Burst and more</li> <li>• External Modulation Input Support: For AM, FM, PM, SUM, PWM</li> <li>• Frequency Counter range: 5Hz to 150MHz or more</li> <li>• Dual Output Channel Should Support: -180digto180dig phase synchronization; Tracking operation of CH2=CH1; Coupling Frequency (Ratio or Difference)</li> <li>• Should have facility to retrieve waveforms from DSO and upload them to arbitrary generator to achieve direct waveform reconstruction.</li> <li>• Display: Minimum 4.3" TFT LCD</li> <li>• Interface: LAN, USB</li> <li>• Store/Recall: 10 Groups of Setting Memories</li> <li>• Protection: Short-circuit protected; Overload: relay automatically disables main output.</li> <li>• Should be earth ground Isolation Design Among I/O Terminals and Instrument Chassis</li> </ul>			2		
95	50 MHz, 4 Channel Digital	<ul style="list-style-type: none"> <li>• Analog Bandwidth: DC to 50MHz</li> <li>• Analog Channels: 4Nos</li> </ul>			2		



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	Storage Oscilloscope	<ul style="list-style-type: none"> <li>• Real time sample rate: 1 GSa/s or better</li> <li>• Memory Depth: 10Mpts per channel or better</li> <li>• Vertical Scale: 1mV/Div to 10V/Div</li> <li>• Time base Range: 5ns/div to 100s/div</li> <li>• Waveform Math Function: +, -, ×, ÷, FFT, FFTrms, User Defined Expression</li> <li>• 1Mpts FFT Frequency Domain Signal Display</li> <li>• Trigger Type: Edge, Pulse Width, Video, Pulse Runt, Rise &amp; Fall, Alternate, time out, Event-Delay, Time-Delay</li> <li>• Automatic Measurement: 36 or more sets of automatic measurement should be available</li> <li>• Waveform Update Rate: 50,000 waveforms per second or better</li> <li>• Display: 7" TFT WVGA Color Display</li> <li>• Zoom In/Play And Pause Function Should be available</li> <li>• Data Logging Function 5 minutes to 100 hours</li> <li>• Digital filter function (LPF, HPF)</li> <li>• Interface: USB 2.0 (Host &amp; Device), Ethernet (LAN) Port with HP Auto MDIX, Go-No GO BNC</li> </ul>					
96	9 KHz to 3 GHz Spectrum Analyzer	<ul style="list-style-type: none"> <li>• Frequency Range: 9 kHz to 3 GHz</li> <li>• Frequency Resolution: 1Hz</li> <li>• Built-in Preamplifier (Gain: 18 dB), 50dB Attenuator, and Sequence Function</li> <li>• Resolution Bandwidth (RBW): 1 Hz to 1 MHz in 1-3-10 sequence</li> <li>• Video Bandwidth (VBW): 1 Hz to 1 MHz in 1-3-10 sequence</li> <li>• DANL (Display Average Noise Level) : &lt;-142 dBm</li> <li>• Phase Noise: &lt;-113 dBc/Hz</li> <li>• Sensitivity: -149dBm/Hz</li> <li>• Marker Frequency Counter Resolution: 1 Hz, 10 Hz, 100 Hz, 1 kHz</li> <li>• Frequency Span Range: 0, 100 Hz to 3 GHz</li> <li>• Frequency Span Resolution: 1Hz</li> <li>• Maximum Safe Input Level: ≤33dBm, ± 50 V DC</li> <li>• AM/FM Demodulation &amp; Analysis Feature Should be available</li> <li>• Measurement/ Analysis Feature: P1dB point, Harmonic, Channel Power, N-dB bandwidth, OCBW, ACPR, SEM, TOI, CNR, CTB, CSO, Noise Marker, Frequency Counter, Time Domain Power, Gated Sweep</li> <li>• Built-in Spectrogram, Topographic and Dual-View Display Modes</li> <li>• Input RF Connector: N-type female</li> <li>• Remote Control Interface: LAN, USB, RS-232</li> <li>• Built in tracking generator: 100 kHz to 3 GHz</li> <li>• Tracking Generator Output Power: -50 dBm to 0 dBm</li> <li>• Earphone Output: 3.5mm stereo jack</li> <li>• Video Output: DVI-I (integrated analog and digital), Single Link. Compatible with VGA or HDMI standard through adapter</li> </ul>		1			
97	Universal Trainer Kit	<p>Universal Trainer Kit is a Digital &amp; Analog any experiment can be performed using this trainer board.</p> <p>The Trainer board consists of 0 - 30 Volt DC CV-CC power supply, +- 12Volt DC Power supply with respect to common Terminal, a +</p>		5			



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		5 Volt DC supply Provided on board with Special terminals. An adjustable clock pulse oscillator, eight bouncer and debouncer.					
98	Wire cutter	Standard		2			
99	Soldaring Iron with stand	Standard		2			
100	De-soldering pump.	Standard		2			
101	Screwdriver set.	Standard		2			
102	Breadboards	Standard		15			
103	Vero Board	Standard		15			
104	Resistor (Different values)	Standard		50			
105	Capacitor (Different values)	Standard		20			
106	Inductor (Different values)	Standard		20			
107	Transformer (9-0-9)	Standard		20			
108	Relay	Standard		20			
109	Switches	Standard		20			
110	Batteries (9v)	Standard		20			
111	Diode & Zener diode	Standard		20			
112	Transistors (CK 100,CL100)	Standard		20			
113	FET (BFW10,BFW 11)	Standard		20			
114	SCR	Standard		20			
115	DIAC	Standard		20			
116	TRIAC	Standard		20			
117	LED	Standard		20			
118	LCD	Standard		20			
119	Photodiode	Standard		20			
120	Phototransistors	Standard		20			
121	ICs (741,555, 7400,7404,7408,7432,7486)	Standard		50			
122	3-phase induction motor	4 pole, 10 HP,220/380 V, 50 Hz		2			
123	Star/delta starter	Starter for 10 H.P motor		2			
124	DC Machine With Loading	DC Machine With Loading Arrangement		2			



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	Arrangement					
125	DC compound Generator	2 kW,1500rpm,220V,9A		2		
126	Meggar	1000v		10		
127	Auto Transformer	Standard		10		
128	Diode	Standard		10		
129	Connecting Wires	Standard		10		
130	Energy Meter	Standard		10		
131	Rheostats	Standard		10		
132	Tachometer	Standard		10		
133	Service Fuse	Standard		10		
134	Distribution Board	Standard		10		
135	PVC wire	Standard		10		
136	Light	Standard		10		
137	Two- Way switches	Standard		10		
138	Switches	Standard		10		
139	Casing	Standard		10		
140	Calling-Bell	Standard		10		
141	Fluorescent Tube	Standard		10		
142	Choke	Standard		10		
143	Starter	Standard		10		
144	Tube connector	Standard		10		

7. The tenderers are not required to submit hard copies of Technical File (Statutory Cover) or My documents (Non-Statutory Cover). Submission of hard copy of Financial Bid is strictly prohibited and only be submitted through online via NIC portal.

8. Evaluation of the tenders

During the tender evaluation process, the “Technical Bid” will be opened first. Those Bidders who have qualified in respect of the essential & other requirements in “Technical Bid” will be identified and their financial bid will be opened. The financial bid of those Tenderer failing to meet the technical & other requirements laid down in the tender will not be opened and be rejected. The Tenderer offering the item found suitable and as per the tender specifications will only be selected. Final selection of the lowest bidder in respect of Financial Bid is subject to further verification. The Financial Bids of only those tenderers who have been considered as Technically Qualified will be opened. If found suitable in the context of above pre qualification etc, the Tenderer quoting the lowest rate will be considered as successful.

9. Terms & Conditions Regarding Purchase Policy of Tendering Authority:

9.1. Bid Information:

- Partial Quotation within the same item will not be accepted and tender will be liable for cancellation.
- All duties, taxes and other levies payable by the contractor under the contract shall be



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- included in the total price but should be indicated separately in the price bid.
- c) The rate quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
  - d) Bidder must follow the instruction for filling up BOQ as per Clause 6.3.
- 9.2. Evaluation of Quotation: The Purchaser will evaluate and compare the quotations determined to be substantially responsive stage wise. Firstly, Technical Bid will be evaluated and thereafter Price Bid for technically qualified bidders will be evaluated for selection of vendor.
  - 9.3. Award of Contract: The purchaser will award the contract to the bidder whose quotation has been determined to be substantially responsive both technically and commercially. Purchaser reserves the right to reject any or all the tender, wholly or partly, without assigning any reason thereof and shall not be bound to accept the lowest bid.
  - 9.4. Warranty: The vendor shall be fully responsible for onsite warranty for all equipment, accessories etc. including spares and services as mentioned in Item Specifications (Clause 6.3). In all respect, warranty period will start from the date of installation Report. Bidder must upload Warranty confirmation certificate showing the warranty period as per the above clause in “TECHNICAL DETAILS” folder.
  - 9.5. Adequate infrastructural facility: The bidder/manufacturer should have registered establishment set up in Kolkata/Asansol or its adjacent locality. In addition, the bidder/manufacturer must have authorised service centre with adequate numbers of sound service personnel. Representatives from both establishment and service centre must be made available within 24 hours after making calls from the Kazi Nazrul University. Documents in support of establishment and service centre with pay roll sheet must be uploaded in “TECHNICAL DETAILS” folder.
  - 9.6. Training Facility: User training regarding the operation of the equipment shall be arranged by the supplier/vendor at no extra cost if required.
  - 9.7. Technical Bid must be submitted along with the copies of OEM license or authorization from the manufacturer. Document in support of the same must be uploaded by the bidder in “TECHNICAL DETAILS” folder. If the bidder is not the manufacturer/brand owner, proper manufacturer’s/brand’s authorization must be uploaded in the said folder. Detail technical catalogue must be uploaded with the bid. If catalogue (with technical detail), OEM license or authorization from the manufacturer is not submitted, the bid may be rejected.
  - 9.8. Credentials: Documents of previous experience of the job, at least 2 years, must be submitted along with the tender.
  - 9.9. DSIR Certification: Kazi Nazrul University does not possess the privilege for availing the facility of procuring items at Concessional Customs Duty and without incurring any excise duty as per DSIR certification at present but applied before authority.
  - 9.10. Make & Model: Bidder must mention Make and Model in the Information Sheet as given vide Annexure-I and must send the product details/catalogue/brochure in the “Technical Details” folder.
  - 9.11. Time Schedule: The supply and installation work must be completed within 15 days from the date of



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receipt of the purchase order.

- 9.12. Validity of offer: A bidder should spell out in the tender that it shall remain valid for a minimum period of 12 months from the date of opening of the tender and during this period, the bidder shall not be entitled to revoke or cancel its offer.
- 9.13. Place of delivery: Dean(Science), Laboratory Building, Kazi Nazrul University, Asansol. Nazrul Road, Kalla More, P.O. –Kalla C. H. Asansol – 713340
- 9.14. Payment Schedule: Payment be made after delivery and installation of the items.
- 9.15. Performance Security:  
Successful bidder should deposit Performance Security money equivalent to the 10% of the order value in the form of DD/Bank Guarantee immediately before issuing purchase order from the University. Such security will be refunded after completion of the warranty period in normal case without any accrued interest. University may forfeit the Security Money in the event of the following circumstances:
- Selected bidder withdraws the bid before expiry of its validity but after receipt of the Purchase Order.
  - Selected bidder does not accept the order after issuing the same or fails to enter into a contract within validity period of offer.
  - Selected bidder fails to supply the items within the scheduled time as specified in the Purchase Order
  - If before expiry of the warranty period, the supplied items break down or do not function satisfactorily due to the cause related with the item itself for its installation and not for any reason caused by the University Authority and the supplier denies to take the responsibility to make the supplied items in order.
  - In case of any false submission/statement by the bidder.
  - In case of any refusal to abide by terms and conditions or refusal to enter into a written agreement as per prefixed terms and conditions.
- 9.16. Quantity Changeability: Quantity as stated in the tender document may be subject to change at the time of issuing purchase order due to the fund crunch or for other valid reasons.
- 9.17. Requisite Documents to be submitted: Bidder must have adequate documents relating to Trade License and updated returns for Income Tax, GST, Audited Statement of Accounts and other documents as sought for under Clause 6.2.II of this tender.
- 9.18. Turnover Criterion: Bidder must have average annual turnover of more than Rs.30 lakh in last three financial year ending 2018-19.
- 9.19. Disposal of Disputes: In case of any dispute, the University's decision will be treated as the final and conclusive. All legal actions are subject to Kolkata jurisdiction only.
- 9.20. The bidders are required to quote for each item separately in terms of basic price and all other charges. Prices can be quoted in Indian Currency only.

## **Discretion of the University:**

- 9.21. University may take decision about non-purchase of the said equipment even after selection of vendor due



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to its fund constraints.

- 9.22. University may seek documents from the bidder in addition to the scanned documents sent by them at the time of uploading technical bid for verification and evaluation of tender.
- 9.23. University reserves the right to relax any clause as stated herein above for selection of responsive vendor.

## 10. Dates & Information:

Sl. No	Activities	Date & Time
1	Date of uploading in the e-tender portal of NIC: <a href="https://wbtenders.gov.in">https://wbtenders.gov.in</a>	09.01.2020
2	Documents download (online)	09.01.2020 at 16hrs.
3	Bid Submission Start Date (online)	09.01.2020 at 16hrs.
4	Bid Submission Closing Date (online)	29.01.2020 at 12hrs.
5	Bid Opening Date (online) – Technical Bid	03.02.2020 at 12hrs.
6	Date of uploading list for technically qualified bidder (online)	To be notified
7	Date of opening of Financial Bid	To be notified
8	Date of uploading of list of bidders along with the approved Rate	To be notified

## 11. Opening the financial bid as per schedule will BE NOTIFIED LATER ON.

Financial bid can be seen & accessed by the bidder through the NIC Portal online after opening of financial bid online. No objections raised by any bidder in this respect will be entertained by the University. No informal tender will be entertained in the Bid further.

12. During the scrutiny, if it comes to the notice of the tender inviting authority that the credential or any other paper found incorrect/manufactured/fabricated, that bidder would not be allowed to participate in the tender and that application will be rejected outright without any prejudice.
13. The Tender Selection Committee reserves the right to cancel the tender due to unavoidable circumstances and no claim in this respect will be entertained.

Sd/-  
Registrar  
Kazi Nazrul University





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## Annexure I

FURNISHING BASIC INFORMATION (To be furnished in the Company's official letter pad)

1	Name of the Bidder	
2	Address for Communication	
3	Contact Number(s)	
4	E-mail ID	
5	Trade License No.(Please enclose copy of Trade License)	
6	PAN(Please enclose copy of PAN Card)	
7	GST No.(Please enclose copy of GST)	
8	Do you have previous experience for supplying similar nature of items at Educational Institute of Higher Learning (Please enclose copy of purchase order & user list, if yes)	Yes/No(Please put tick mark)
9	Annual Turnover as per Audited P/L ACCOUNTS & BALANCE SHEET	2016-17: Rs..... 2017-18: Rs..... 2018-19: Rs..... Average Annual Turnover: Rs.....
10	Status of the bidder (Please enclose copy authenticating your status)	Manufacturer/Dealer/Distributor/Selling Agent/Stockiest (Please put tick mark)



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## Annexure II

### APPLICATION FOR TENDER

(To be furnished in the Company's official letter pad with full address and contact no, E mail address etc)

To  
The Registrar  
KaziNazrul University, Asansol

Sub: Tender forthesupplyofvarious laboratory instruments of Mining Department

Ref:TenderNo.....dated.....

Sir,

Havingexaminedthepre-qualification&otherdocumentspublishedintheTender No..... dated .....,I/wehereby submit all the necessary information and relevant documents for evaluation:

1. That theapplicationis made by me/us on behalf of.....in the capacity of ..... duly authorized to submit the offer. The authorization letter from the company is attached in Annexure III.
2. WeacceptthetermsandconditionsaslaiddowninthetenderdocumentvideClause9and declarethatweshallabidebyitthroughoutthetenderperiodincludingitsexensions,ifany.
3. WehavegonethroughtheTenderDocumentthoroughlyandquotedthetendereditems keeping in mind all sorts of information as furnished in the tender document including Corrigendum/Addendum as published from time to time
4. We are offering rate for the following item /items and assured supply to theKaziNazrul University
5. Intheeventofbeingsselected,Iwillmakethesupplywithinthestipulatedperiodexceptingthe condition which isbeyondourcontrol.

Date:

Signature and name of applicant including title and capacity in which application is made.

Contact no:

E-mail address:

Postal Address:



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## Annexure III

(Authorization letter in favour of the applicant (other than Managing Director/Proprietor/Partner) from the competent authority)

(To be furnished in the company's official letter pad with full address and contact no, E mail Address etc.)

(TO WHOM IT MAY CONCERN)

This is to certify that Mr. .... (Name), Employee of this organisation as ..... (Official Designation) is hereby authorised to submit tender online, Vide Ref. No. ...., dated ..... on behalf of the Organisation.

Signature of the competent authority with Seal.....(Signature of the Authorised Person)

Signature of Mr. .... is hereby attested.

Signature of the competent authority with Seal



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## ANNEXURE IV

(Affidavit Proforma)

(To be furnished in Non – Judicial Stamp paper of appropriate value duly notarized)

I, Sri/Smt..... the Managing Director/Proprietor (etc.) of the Firm.....(Name of the firm) at (address)..... do hereby solemnly affirm and declare as follows:

1. That I have not ever been convicted of any offence making myself liable to be disqualified to supply of Chemicals/Equipments/other items to any Govt. or Govt. undertaking Organization/Institution in the State of West Bengal or other State or States.
2. That no case is pending against me or against my firm in any criminal court of law to supply of Laboratory Equipment and other items to the Govt. or Govt. undertaking Organization/Institution in the State of West Bengal or other State or States (If any case is pending, state the details).
3. That, I also declare that if any information subsequently found incorrect or false will it automatically render the tenders submitted by me cancelled and make me liable for penal/legal action as per law of the country.
4. That my concern has not yet been declared bankrupt by any banking or money lending agency duly licensed by RBI nor has it been considered doubtful by any Government concern so far as the solvency of the organisation is concerned.
5. That I do further affirm that the statements made by me in this tender are true to the best of my knowledge and belief and all the documents attached are genuine & correct.

Deponent(s)



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## ANNEXURE V

(Affidavit Proforma)

(To be furnished in Non – Judicial Stamp paper of appropriate value duly notarized)

### DECLARATION ONKNU

I, the undersigned, do hereby declare that on behalf of my organization, I will comply all the formalities that are required to be complied as per KNU and will observe all clauses of the KNU (including Terms & conditions). In case of any non-observance of any clause(s), we will be bound to follow the decision taken by the Kazi Nazrul University for taking decision related with the tender.

Full signature of the Person (Designation with Seal)

Date:

Place: