DST-iTBI, NEC
K R Innovation Centre
National Engineering College, K R Nagar, Kovilpatti-628503

GENERAL CONDITIONS

1. Sealed Tenders in duplicates are invited by the Chief Executive Officer, K R Innovation Centre, National Engineering College, K R Nagar, Kovilpatti-628503, Thoothukudi Dist., Tamilnadu, for the supply of Machineries/Equipments as specified in the schedule attached. Both commercial and technical bids should be kept in separate sealed covers.

2. Tender documents can be downloaded from our website should be accompanied by demand draft of ` 1180/- (Rupees One thousand one hundred and eighty only) for each item drawn in favour of "K R Innovation Center" payable at Kovilpatti towards the cost of tender fee and Service Tax. (Not Refundable)

3. Only DGS & D suppliers / Government e-Marketplace (GeM) users / actual manufacturers, or their authorized agents and stockiest may tender. Sub-letting and assigning of contracts, except with the prior permission of the Chief Executive Officer K R Innovation Centre, National Engineering College, K R Nagar, Kovilpatti-628503, Thoothukudi Dist., Tamilnadu, is prohibited.

4. The quotations should be sent separately for each item when there is more than one item, in the schedule in a sealed envelope superscribed as Tender No..(for the supply of...) to K R Innovation Centre, **due date extended up to 09-09-2024**. The sealed cover should be addressed to the Chief Executive Officer, K R Innovation Centre, National Engineering College, K R Nagar, Kovilpatti-628503, Thoothukudi Dist., Tamilnadu and sent by **Registered/Speed Post/Courier so as to reach this office before 4.00 PM on 09-09-2024**

5. Tenders will be opened by the Chief Executive Officer, K R Innovation Centre, National Engineering College, K R Nagar, Kovilpatti-628503, Thoothukudi Dist., Tamilnadu or by an Officer of the College authorized by him, on his behalf at 10.00 AM on **11-09-2024** in conference hall, National Engineering College, Kovilpatti-628503

6. All the tenders must be submitted in the prescribed form, they may be copied, if so desired, but even in that case the original forms should be returned with the quotation.

7. Prices: The prices should be quoted in Rupees for Indigenous items & in Foreign Currency (CIFChennai) for imports. Sales Tax, if extra should be charged**.**

8. GST: Percentage of CGST/SGST/IGST should be clearly specified. GST Identification Number (GSTIN) should be furnished. Copy of the GST Registration Certificate also should be enclosed. No GST / Customs Duty Exemption Certificate, full tax may be quoted.

9. Port of Destination: Chennai, India for imports. Customs clearance will be made through our clearing agent from Chennai Airport.

10. Payment: 100% of the cost of stores will be paid within a reasonable time after the receipt of the stores in good condition and in accordance with the specifications 100% payment against LC or Telegraphic Transfer for imports of equipments

11. Validity: The quotation should be valid at least for 90 days from the date of opening the tender and the term "the prices ruling at the time of delivery" will not be accepted.

12. The Loss or Damage: External damages or shortages that are prima facie the results of rough handling in transit or due to defective packing will be intimated within a fortnight from the receipt of the material. Internal defects, damages of any internal parts which cannot ordinarily be exhibited on a superficial inspection though due to bad handling and transit or defective packing would be intimated within two months from the date of receipt of the stores. In either case the damaged or defective stores should be replaced by you free of cost and the defective stores may be taken back at your cost and risk.

13. Guarantee: The supplier shall undertake to repair free of charge or replace any defective part of the equipment supplied due to defective materials or faulty design or bad workmanship during a period of one year following the date of commissioning of the equipment

14. Leaflets and Descriptive Literature: Full descriptive particulars and drawings of the equipment offered should accompany the tender. Information regarding the country of manufacture or origin of materials used in the manufacture of the articles should be furnished.

15. Tests: Manufacturers certificate for the routine tests specified in the B.I.S. of latest issue or as per manufacturer's standard practice should be forwarded in duplicate. The materials will be rejected, if the test results are not satisfactory.

16. Acceptance: The College reserves the right to reject any Tender in full or in part without assigning any reasons there for.

17. Delivery: The delivery period should be specified.

18. **Earnest Money Deposit**: Tender must be accompanied by Earnest Money Deposit (EMD) at the rate of 2% of total cost separately for each item that is being quoted for, in the form of Demand Draft in favour of "K R Innovation Centre" payable at Kovilpatti-628503.EMD shall be paid in Indian currency only. The EMD of unsuccessful bidders will be returned on or before the 30th day after the award of the contract. The EMD of 2% for successful bidders will be returned after receiving the security / performance deposit.

19. Security deposit and performance security : A security deposit at the rate of 5% of the total cost in the form of DD shall be collected from the successful bidder and shall be held back as security deposit till successful installation, trial and training and subsequently as performance security deposit till the end of warranty period. The amount shall be returned after 60 days after the completion of all contractual obligations including warranty obligations. The EMD shall be forfeited if the tenderer withdraws his offer after the tender opening during the bid validity period or after the award of contract. K R Innovation Centre shall not be liable for payment of any interest on EMD and security / performance deposit or any depreciation thereof. Any offer not accompanied with the EMD shall be rejected summarily as non-responsive

20. **Penalty clause**: The delivery should be guaranteed by you under our penalty clause mentioned hereunder

Should delivery be delayed by strike, lockouts, fire accidents or any case whatsoever, beyond the reasonable control of the contractor and whether such delay or impediment occurs before or after the time or extended time for dispatch or completion, a reasonable extension of time shall be granted. If the contractor fails in due performance of his contract, within the time fixed by the contract or any extension thereof the contractor is liable at the discretion of the purchaser to a penalty up to 4% per month of the contract value of such portion only of the materials as cannot in consequence of the delay be used during each month between the appointed or extended time as the case may be and the actual time of acceptance, but such penalty/liability for the delay shall not in any case exceed 25% of the contract value of such portion of the materials.

21. Quotations without complete particulars will not be considered.

Chief Executive Officer

K R Innovation Centre
National Engineering College, K R Nagar, Kovilpatti-628503

i)	item	:	See schedule
ii)	Name of the Tenderer	:	
iii)	Specification	:	Specification of the equipment offered.
	See schedule of items for item details.		
	Item Price	:	
iv)	Amount of Excise duty/customs duty (% age should be clearly mentioned)	:	
	Amount of CGST/SGST/IGST (% age should be clearly specified)	:	
	Freight charges (F.O.R.)	:	
	Discount if any	:	
	Details of maintenance	:	
v)	Warranty period	:	
vi)	Delivery time	:	
vii)	Payment terms	:	
100% value of the stores will be paid after receipt in good condition and satisfactory installation			

Date: SIGNATURE
Firm Seal   OF REPRESENTATIVE OF THE FIRM

NOTE:

1. Packing, forwarding and freight charges may be clearly mentioned for delivery of the stores at the institutional premises. Rate for F.O.R. Kovilpatti -628503, Thoothukudi, Tamilnadu may also be mentioned separately.
2. The tenders should be accompanied by the following declaration: I/We hereby quote for the supply of stores of the rates specified in the underwritten in the manner and within the time as set forth in the terms and conditions attached thereto. The quotations furnished in the schedule below are subject to conditions set forth in the tender notice and tender forms and instructions to tender received by me/us.

SCRAP BALING PRESS

Sl. No.	Specification	Requirement	SUPPLIER COMPLIANCE (YES/NO)
1.	Type	Vertical/Horizontal	
2.	Pressing Force	25 Tons or more	
3.	Bale Size (L x W x H)	600 x 400 x 300 mm or better	
4.	Bale Weight	20 kg or more	
5.	Production Capacity	2 bales per hour or better	
6.	Motor Power	10 HP or more	
7.	Control System	PLC/HMI	
8.	Cooling System	Air/Oil cooling	
9.	Feeding Method	Manual/Conveyor	
10.	Oil Tank Capacity	200 litres or more	
11.	Material of Construction	Mild Steel/Stainless Steel	
12.	Hydraulic System	Dual pump system	
13.	Electrical Supply	380V, 50Hz, 3 Phase	
14.	Automation Level	Semi-Automatic/Automatic	
15.	Safety Features	Emergency Stop, Safety Interlocks	
16.	Noise Level	< 80 dB	
17.	Warranty	2 years or more	
18.	Compliance with Standards	ISO/CE/Other	
19.	Installation and Commissioning	Included/Excluded	
20.	Spare Parts Availability	Immediate/Within 1 week	
21.	Bale Ejection	Automatic/Manual	
22.	Chamber Size	1500 x 1000 x 700 mm or better	
23.	Cylinder Bore	200 mm or better	
24.	Ram Speed	10 mm/s or better	
25.	Hydraulic Oil Type	Mineral/Synthetic	
26.	Paint and Finish	Anti-corrosive paint	
27.	Operating Temperature Range	-10°C to 50°C	
28.	Pressure Gauge	Included/Not Included	

BIOMASS BRIQUETTING MACHINE

Sl. No.	Specification	Requirement	SUPPLIER COMPLIANCE (YES/NO)
1.	Briquetting Capacity	Minimum 1000 kg/hr	
2.	Power Requirement	Not more than 50 kW	
3.	Raw Material Compatibility	Agricultural waste, biomass, etc.	
4.	Briquette Size	Diameter 50-90 mm	
5.	Briquette Density	Minimum 1.2 g/cm³	
6.	Machine Dimensions	Provide specific dimensions (L x W x H)	
7.	Weight of Machine	Specify in kg	
8.	Noise Level	Below 85 dB	
9.	Operating Temperature Range	-10°C to 50°C	
10.	Automation Level	Manual/Semi-automatic/Automatic	
11.	Safety Features	Emergency stop, safety guards, etc.	
12.	Maintenance Requirements	Frequency and type of maintenance required	
13.	Warranty Period	Minimum 2 year	
14.	Certification Standards	ISO, CE, etc.	
15.	Installation and Training	Included/Not included	
16.	Spare Parts Availability	Readily available/Not available	
17.	Technical Support	24/7 support/Business hours support	
18.	Delivery Time	Specify in weeks/months	
19.	Country of Origin	Specify	
20.	Previous Installations	Provide references	

3D SCANNER

Sl. No.	Specification	Requirement	SUPPLIER COMPLIANCE (YES/NO)
1.	Scanning Technology	LIDAR based 3D Scanning system or better with scaning station and turret table.	
2.	Accuracy And Work Volume	Infinite Measuring volume with accuracy of 0.2 - 0.05mm	
3.	Resolution	12-megapixel image at 4032 by 3024	
4.	Scanning Area	No limits	
5.	Linearity Z-axis	±0.2% or better	
6.	Linearity X-axis	±0.2% or better	
7.	Scanning time	Min 1 Second – 1Minute.	
8.	Data Output Format	STL, OBJ, PLY, etc.	
9.	Connectivity	USB, Ethernet, Wi-Fi, etc.	
10.	Software Compatibility	Compatible with major CAD software	
11.	Measuring rate	up to 4 Khz or better	
12.	Power Supply Requirement	220v-250V, 50Hz.	
13.	Weight of Scanner	Specify in kg	
14.	Dimensions of Scanner	Provide specific dimensions (L x W x H)	
15.	Portable/Fixed	Specify	
16.	Calibration	Certified calibration plates covering all measurement volumes to be supplied	
17.	Safety Features	Eye safety, etc.	
18.	Maintenance Requirements	Frequency and type of maintenance required	
19.	Warranty Period	Minimum 2 year	
20.	Installation and Training	Included/Not included	
21.	Spare Parts Availability	Readily available/Not available	
22.	Technical Support	24/7 support/Business hours support	

AUTOMATION TRAINING KIT

Pneumatic Training Kit				
Sl. No	Description	Minimum Quantity	Specifications Range	Supplier Compliance (YES/NO)
1.	Rolling table with twin-post	1	Height adjustable, sturdy frame, casters with lock, minimum table size: 1200mm x 600mm	
2.	Drawer unit for Roller table	1	Minimum 3 drawers, lockable, compatible with rolling table	
3.	Air cleaning unit with 3/2 distribution valve	1	Filtering capacity: 5 µm, pressure: 0-10 bar	
4.	Distribution block	1	Minimum 4 outlets, pressure: 0-10 bar	
5.	3/2 NC valve, operated by roller lever	5	Port size: 1/8", operating pressure: 0-8 bar	
6.	3/2 NC switch-operated double valve	1	Port size: 1/8", operating pressure: 0-8 bar	
7.	Double 3/2 NC valve, operated by a push-button	2	Port size: 1/8", operating pressure: 0-8 bar	
8.	5/2 valve with 2-position selector	1	Port size: 1/8", operating pressure: 0-8 bar	
9.	3/2 NO, air operated single valve	1	Port size: 1/8", operating pressure: 0-8 bar	
10.	Air operated 5/2 single valve	1	Port size: 1/8", operating pressure: 0-8 bar	
11.	Air operated 5/2 double valve	2	Port size: 1/8", operating pressure: 0-8 bar	
12.	3/2 NC timer valve, convertible	1	Timing range: 0.1-60 seconds, port size: 1/8", operating pressure: 0-8 bar	
13.	Double acting cylinder	2	Bore size: 16-32mm, stroke length: 50-200mm, operating pressure: 0-10 bar	
14.	Single acting cylinder	1	Bore size: 16-32mm, stroke length: 25-100mm, operating pressure: 0-10 bar	
15.	Single direction speed controller (double)	2	Port size: 1/8", flow control: adjustable	
16.	Quick exhaust valve module	2	Port size: 1/8", operating pressure: 0-10 bar	
17.	Double "OR" valve	1	Port size: 1/8", operating pressure: 0-8 bar	
18.	Double "AND" valve	1	Port size: 1/8", operating pressure: 0-8 bar	

No.		Minimum Quantity	Specifications	
19.	Pressure Indicator	1	Range: 0-10 bar, digital or analog display	
20.	Set of 4 mm OD tubes	1	Length: 10m, material: polyurethane or similar, pressure: 0-10 bar	
21.	Set of 10 "T" fittings	1	Port size: 4mm, material: brass or plastic	
22.	Set of 10 x 4mm plastic plugs	1	Port size: 4mm, material: plastic	

Electro Pneumatic Components			
Description	**Minimum Quantity**	**Specifications Range**	**Supplier Compliance (YES/NO)**
Air cleaning unit with 3/2 distribution valve	1	Filtering capacity: 5 µm, pressure: 0-10 bar	
Distribution block	1	Minimum 4 outlets, pressure: 0-10 bar	
Double acting cylinder with reed switch	1	Bore size: 16-32mm, stroke length: 50-200mm, operating pressure: 0-10 bar	
Single acting cylinder	1	Bore size: 16-32mm, stroke length: 25-100mm, operating pressure: 0-10 bar	
Single direction speed controller (double)	2	Port size: 1/8", flow control: adjustable	
Quick exhaust valve module	2	Port size: 1/8", operating pressure: 0-10 bar	
5/2 single solenoid valve	1	Port size: 1/8", voltage: 24V DC, operating pressure: 0-8 bar	
5/2 double solenoid valve	2	Port size: 1/8", voltage: 24V DC, operating pressure: 0-8 bar	
Set of electrical inputs (Button pad with 3 push-buttons)	2	Voltage: 24V DC, NO and NC contacts	
Set of 3 relays	1	Voltage: 24V DC, contact rating: 10A	
Set of 2 timer relays	1	Timing range: 0.1-60 seconds, voltage: 24V DC, contact rating: 10A	
Electrical end of stroke	2	Voltage: 24V DC, NO and NC contacts	
Photoelectric sensor	1	Sensing range: 0-50mm, voltage: 24V DC, output: PNP/NPN	
Indicators (pilots, buzzer)	1	Voltage: 24V DC, sound level: ≥80 dB	
Electric counter	1	Voltage: 24V DC, counting range: 0-99999	
Set of connection cables	1	Length: 1m, 2m, and 5m, voltage: 24V DC	
Digital pressure switch	1	Range: 0-10 bar, display: digital, output:	

		PNP/NPN	
Set of 4 mm OD tubes	1	Length: 10m, material: polyurethane or similar, pressure: 0-10 bar	
Set of 10 "T" fittings	1	Port size: 4mm, material: brass or plastic	
Set of 10 x 4mm plastic plugs	1	Port size: 4mm, material: plastic	

Add-On PLC Training Kit			
Description	**Minimum Quantity**	**Specifications Range**	**Supplier Compliance (YES/NO)**
Siemens make S7 1200	1	CPU with minimum 6 DI, 4 DO, 2 AI, 2 AO, programming language: Ladder, FBD, SCL	
Inductive sensor	2	Sensing range: 0-10mm, voltage: 24V DC, output: PNP/NPN	
Capacitive sensor	2	Sensing range: 0-10mm, voltage: 24V DC, output: PNP/NPN	
Optical sensor	2	Sensing range: 0-50mm, voltage: 24V DC, output: PNP/NPN	

Air compressor		
Description	**Specifications Range**	**Supplier Compliance (YES/NO)**
Oil lubricated, Air Compressor		
Pressure	Adjustable up to 8 bar	
Flow Capacity	Minimum 50 lpm	
Tank Volume	Minimum 50 l	
Duty Cycle	Minimum 50%	
Noise	Maximum 60 dB	

Software	
Description	**Specifications Range**
Users	Minimum 5 perpetual licenses
Simulation	Both 2D and 3D simulation capabilities

Capabilities	
Programming	Support for multiple programming languages
Connectivity	Compatibility with standard PLCs and data acquisition cards
Libraries	Comprehensive libraries for various domains

Animation Software for Pneumatics:
Description
   1. Functional Animation of Products and Symbols
   2. Circuit Designing Tutorial
   3. Product Description and Construction of Elements	

IIoT Add-On Module:

Component	Description	Specification Range	Supplier Compliance (YES/NO)
IIoT Add-on Module	Operating Voltage:	24 VDC ± 10%	
	Interface:	LAN (Ethernet)	
	Communication:	Wi-Fi (2.4 GHz or 5 GHz), WAN (Cellular, Satellite)	
	Software Included:	eCatcher, ViewON, eBuddy	
	Function:	Critical parameters monitoring, Remote access	
	Connection Type:	4mm banana plug	
	Mounting:	Press to Lock / Unlock	
Programming Cable	Make:	Phoenix	
	Cable Type:	RJ45 to RJ45	
	Length:	5 meters ± 0.1 meters	
	Packing:	CD with case	
Electrical Connection Set	Connector Type:	4mm Banana plug	
	Cable Colors:	Red and Black	
	Cable Lengths and Quantities:	- Red: 1000mm ± 10mm x 1, 750mm ± 10mm x 2, 300mm ± 10mm x 8	
		- Black: 1000mm ± 10mm x 1, 300mm ± 10mm x 6	
Switch Mode Power Supply		Specifications to be provided	
IIoT Exercise Book – Basic IIoT exercises			

Video Conferencing System

S. No	Description	Specifications	Supplier Compliance (YES/NO)
1.	Video Conferencing system Package	Full HD1080p camera with necessary cables and connectors, wall mount kit, Remote control, adjustable ceiling mount kit, Additional microphones.	
2.	Video Standards and Resolutions	It should support H.323, SIP standards for communications.	
		It should support H.261, H.263, H.263, H.263+H.264	
		It should support 1080 at 30fps, 720p at 60fps and 720p at 30fps.	
3.	Content Standards and Resolutions	It should support content sharing using standard based H.239 and BFCP over SIP	
		It should support content resolution at HD1080p@ 30fps	
		It should transmit both people and content simultaneously to the far end location at 1080p@30fps	
4.	Audio Standards and Features	It should support G.711, G.728, G.729, G.722, G.722.1 or better	
		It should support 15KHz bandwidth with crystal clear audio and stereo sound.	
		Automatic Gain Control and Automatic Noise Reduction	
5.	Video and Audio Inputs	3xHD input for connecting main and additional HD cameras.	
		1*DVI/HDMI input for connecting PC/Laptop/HD device to share HD content.	
		Microphone Input	
		1x3.5mm stereo line-in	
6.	Video and Audio Outputs	3xHDMI/DVI output for connecting main monitor, recorders etc.,	
		1x3.5mm stereo line-out	
7.	Other Interfaces	1x10/100 LAN port	

		1xRS-232 mini-DIN8-pin	
8.	Camera	It should support 1080p at 60fps with minimum 10x optical zoom and min 70° field of view.	
		½"CMOS, Auto focus, Auto-Iris, minimum 50lux, with IR Detectors.	
		It should support PAN Range of minimum +/-85°, and Tilt of +/-30°	
		Camera stand to mount base on the TV mounted on ceiling.	
9.	Network Features	H.323 and SIP bandwidth support min 6Mbps	
		IPv4 and IPv6 support from day one	
		Auto Gatekeeper Discovery.	
		IP precedence.	
10.	Security	Media Encryption (H.323, SIP): AES-128, AES-256.	
		Authenticated access to admin menus, web interface and Telnet API.	
		Local account password policy configuration.	
		H.224/H.281, H.323 Annex, H.225, H.245, H.241, H.239, H.460	
		It should support native Lync server integrations.	

Desktop systems

Sl.No	Description	Specification	Supplier Compliance (YES/NO)
1.	Processor Generation	13th Generation Intel® Core™ i7 processor	
2.	Processor Name	Intel® Core™ i7-13700 (up to 5.2 GHz with Intel® Turbo Boost Technology, 30 MB L3 cache, 16 cores, 24 threads)	
3.	Chipset:	Intel® H670	
4.	Graphics	Intel® UHD Graphics 770	
5.	Product Color & Form Factor	Dark black & Tower	
6.	Memory	16 GB DDR4-3200 RAM (2 x 8 GB)	
7.	Video Connectors	1 VGA; 1 HDMI-out 1.4b	
8.	Hard Drive Description (1st)	512 GB PCIe® NVMe™ M.2 SSD	
9.	Hard Drive (2nd)	1 TB 7200 rpm SATA HDD	
10.	Audio Features	5.1 surround sound	
11.	Pointing Device	HP 125 USB Black Wired Mouse	
12.	Monitor	68.6 cm (27) FHD (1920 x 1080 @ 75 Hz) Flat IPS with Edge-lit 1 HDMI 1.4, 1 Display Port™ 1.2, 1 VGA	
13.	Keyboard	HP 125 USB Black Wired Keyboard	
14.	Operating System	Windows 11	
15.	Microsoft Office	Microsoft Office Home & Student 2021 Lifetime Subscription	

Laptop systems

Sl.No	Description	Specification	Supplier Compliance (YES/NO)
1.	Processor Generation	Intel® Evo™ platform Powered by Intel® Core™ Ultra 7 processor	
2.	Processor Name	Intel® Evo™ platform Powered by Intel® Core™ Ultra 7 processor 155H (up to 4.8 GHz with Intel® Turbo Boost Technology, 24 MB L3 cache, 16 cores, 22 threads)	
3.	Chipset:	Intel® integrated SoC	
4.	Display	40.6 cm (16) diagonal, WQXGA (2560 x 1600), multitouch-enabled, 48-120 Hz, IPS, edge-to-edge glass, micro-edge, Corning® Gorilla® Glass NBT™, Low Blue Light, 400 nits, 100% sRGB	
5.	Graphics	Intel® Arc™ Graphics	
6.	Bezel	micro-edge	
7.	Touch screen & Flicker-Free	Yes	
8.	Screen To Body Ratio	90.55%	
9.	Memory	16 GB LPDDR5x-6400 MHz RAM (onboard)	
10.	Wireless	Intel® Wi-Fi 6E AX211 (2x2) and Bluetooth® 5.3 wireless card	
11.	Hard Drive Description	1 TB PCIe® Gen4 NVMe™ TLC M.2 SSD	
12.	Webcam	HP Wide Vision 9MP IR camera with camera shutter, temporal noise reduction and integrated dual array digital microphones	
13.	Audio Features	DTS:X® Ultra; Quad speakers; HP Audio Boost; Poly Studio	
14.	Stylus	HP Rechargeable MPP2.0 Tilt Pen	
15.	Fingerprint Reader	Fingerprint reader	
16.	Pointing Device	Haptic touchpad	
17.	Keyboard	Full-size, backlit, nightfall black keyboard	

| 18. | Operating System | Windows 11 | |
| 19. | Microsoft Office | Microsoft Office Home & Student 2021 Lifetime Subscription | |

Tender No. KRIC/NEC-iTBI/2024/12

10KVA UPS system:

Sl.No	Description	Specification	Supplier Compliance (YES/NO)
1.	UPS	10 KVA Online UPS including inverter transformer 240V DC Input Voltage : 3Phase Output Voltage: 1 Phase	
2.	Battery Details	12V/40AH Exide Tubular (20 Nos.)	

Tender No. KRIC/NEC-iTBI/2024/13

State of Art IoT Lab

Component Name	Specifications		Quantity	Supplier Compliance (YES/NO)
Arduino Uno	Microcontroller	ATmega328P	10	
	Operating Voltage	5V		
	Input Voltage	7-12V		
	Digital I/O Pins	14 (of which 6 provide PWM output)		
	Analog Input Pins	6		
	Clock Speed	16 MHz		
	Flash Memory	32 KB (ATmega328P) of which 0.5 KB used by boot loader		
	SRAM	2 KB (ATmega328P)		
	EEPROM	1 KB (ATmega328P)		
	Connectivity	None		

	USB Interface	USB Type-B		
	Power Consumption	Around 50 mA		
	Dimensions	68.6 mm x 53.4 mm		
	Programming	Arduino IDE		
	Special Features	Extensive shields and modules available		
Node MCU	Microcontroller	ESP8266	4	
	Operating Voltage	3.3V		
	Input Voltage	4.5-10V		
	Digital I/O Pins	11		
	Analog Input Pins	1		
	Clock Speed	80 MHz / 160 MHz		
	Flash Memory	4 MB (external)		
	SRAM	64 KB instruction, 96 KB data		
	EEPROM	None		
	Connectivity	Wi-Fi (802.11 b/g/n)		
	USB Interface	Micro USB		
	Power Consumption	Around 80-300 mA (depending on Wi-Fi usage)		
	Dimensions	48.26 mm x 25.4 mm		
	Programming	Arduino IDE, Lua		
	Special Features	Built-in Wi-Fi, easy for IoT projects		
Zigbee Sensor Node	- Communication: Zigbee 3.0, - Range: Up to 300 meters, - Power Supply: Battery-operated or mains-powered, - Sensor Types: Temperature, light,	2	

	pressure, etc., - Data Rate: Up to 250 kbps, - Operating Temperature: -40°C to 85°C, - Security: AES-128 encryption		
WiFi Sensor Node	- Communication: WiFi 802.11 b/g/n, - Range: Up to 100 meters, - Power Supply: Battery-operated (3.7V) or mains-powered<br- Sensor Types: Temperature, CO2, humidity, etc., - Data Rate: Up to 150 Mbps, - Operating Temperature: -10°C to 50°C, - Security: WPA2 encryption	2	
Bluetooth/Zigbee/WiFi Sensor Tag	- Communication: Bluetooth 4.0/5.0, Zigbee 3.0, WiFi 802.11 b/g/n - Range: Bluetooth (up to 100 meters), Zigbee (up to 300 meters), WiFi (up to 100 meters), - Power Supply: Battery-operated (3.7V), - Sensor Types: Temperature, motion, humidity, etc., - Data Rate: Bluetooth (up to 3 Mbps), Zigbee (up to 250 kbps), WiFi (up to 150 Mbps), - Operating Temperature: -20°C to 60°C, - Security: AES/WPA2 encryption	5	
GSM Module	- Communication: GSM/GPRS/EDGE ,- Frequency Bands: Quad-band (850/900/1800/1900 MHz), - Power Supply: 3.3V to 4.2V, - Data Rate: Up to 85.6 kbps (GPRS), 236.8 kbps (EDGE), - SIM Card: Standard SIM, - Operating Temperature: -40°C to 85°C, - Security: SMS encryption	7	
IR Module Set + Remote	- Includes: IR sensor module, IR receiver, remote control ,- Function: Infrared communication for remote control applications, - Frequency Range: Typically 38 kHz ,- Power Supply: 5V DC	10 sets	
Microcontroller	- Microcontroller: Varies (e.g., ESP32 –	10	

	5 nos. Arduino nano – 5 nos), - - Function: Prototyping IoT applications		
DC Motor	- Type: Brushed or Brushless, - Voltage Rating: e.g., 5V, 12V, 24V, - Current Rating: e.g., 0.5A to 5A, - Speed: RPM (Revolutions Per Minute), - Torque: Specified in Nm (Newton-meters), - Control: PWM (Pulse Width Modulation)	2	
LED Set Assorted	- Type: Various (e.g., RGB, single-color), - Voltage Rating: Typically 2V to 3.5V, - Current Rating: Typically 20mA to 30mA, - Brightness: Specified in lumens, - Color: Varies by LED, - Package: Through-hole or SMD (Surface Mount Device)	10	
Relay Board	- Number of Relays: e.g., 4, 8, - Relay Type: SPST (Single Pole Single Throw) or DPDT (Double Pole Double Throw), - Relay Rating: e.g., 5V DC coil, 10A switch, - Control Interface: Typically digital inputs, - Power Supply: 5V DC or 12V DC, - Mounting: PCB (Printed Circuit Board) or panel mount	2	
Dust Sensor Module	- Measurement Range: 0-1000 µg/m³, - Sensitivity: Typically 0.1 µg/m³, - Accuracy: ±10%, - Response Time: ~1 sec, - Output Type: Analog Voltage or Digital, - Power Supply: 5V DC, - Interface: Analog Voltage or UART/I2C	3	
Relay Board	- Number of Relays: Typically 4, 8, or	2	

	16, - Relay Type: SPST, SPDT, - Voltage Rating: 5V, 12V, or 24V, - Current Rating: 10A to 20A, - Contact Rating: AC or DC, - Control Interface: Digital Inputs		
Solenoid	- Type: Linear or Rotary, - Stroke Length: Variable, - Voltage: 12V, 24V, or other,- Force: Variable, - Duty Cycle: Intermittent or Continuous	2	
Stepper Motor	- Type: Unipolar or Bipolar, - Steps per Revolution: 200 (1.8° per step), - Voltage: 12V to 48V, - Current Rating: Variable, - Control Interface: Digital (Stepper Driver)	2	
Servo Motor	- Type: Standard, Micro, or High- Torque, - Voltage: 4.8V to 6V - Torque: Variable, - Control Signal: PWM, - Range of Motion: Typically 180°	2	
Pneumatic Actuator	- Type: Double-Acting or Single-Acting ,- Stroke Length: Variable, - Operating Pressure: 0.5 MPa to 1.0 MPa, - Bore Size: Variable, - Speed: Variable	1	
Hydraulic Actuator	- Type: Single -Acting or Double-Acting, - Stroke Length: Variable, - Operating Pressure: High (up to 3000 psi) ,- Bore Size: Variable, - Speed: Variable	1	
RFID Tags (Automation in IoT)	Low 6 inches to 8 inches and High Frequency Tags	300 100	
UHF Handheld Reader	Hand held USB Micro-B	1	

	Weight – 721 gms Dimensions - 213 x 87 x 151 mm (H x W x L)		

Tender No. KRIC/NEC-iTBI/2024/14
Equipment, Network, Devices and IT infra for iTBI IOT Lab

Item	Specification	Quantity	Supplier Compliance (YES/NO)
sh Board Screen	Interactive presentations, Educational purposes, Collaborative meetings - **Type**: LED/Plasma , - **Resolution**: 4K Ultra (3840 X 2160) HD or higher , - **Size**: 65 inches or larger , - **Input Ports**: 3 HDMI, VGA, Display Port , - **Brightness**: 300 cd/m² or higher , - **Refresh rate 60 Hertz** Sound: 24 watt output USB port – 2 nos. Wifi, Bluetooth and head phone output for Ethernet connectivity	1	
IOT Server	4U Chassis with 1200W Gold Certified Power Supply, Support for 8 Hot Swappable Drives AMD EPYC 48 Core, 96 Thread Dual processor 256GB DDR4 RAM, expandable up to 2 TB 16TB Sas Drives. RTX5000 16GB Graphics Card	1	
FIREWALL + ROUTER	1U Rack Mount Support PFSENSE Software Support Intel N2600 CPU 4GB RAM, 64Gb Flash 6 Gigabit Ethernet Port	1	
UPS	**Capacity**: 1000 VA or higher, - **Battery Type**: Sealed Lead Acid (SLA) or Lithium-Ion, - **Runtime**: 10-30 minutes at full load, - **Outlets**: Multiple, with surge protection	1	

	- **Form Factor**: Rack-mounted or tower , - **Features**: Automatic Voltage Regulation (AVR), LCD display for status		
RACK	27U 600X1000mm PDU 10 Socket 16A Server Tray 1000mm(2 Nos) Keyboard Tray 4 Fans	1	
Gigabit Ethernet Switch	- Ports: 24, 48, or more ports , - Speed: 1 Gbps per port , - RJ 45 ports Form Factor: Rack-mounted or desktop (fanless) - Layer: Layer 2 (Data Link) , - Management: Managed or unmanaged , - Power over Ethernet (PoE): Optional support , - Switching Capacity: Typically 48 Gbps or higher	1	
WIFI CPE	- Frequency Bands: 2.4 GHz, 5 GHz, or both (dual-band) , - Wireless Standard: Wi-Fi 5 (802.11ac) or Wi-Fi 6 (802.11ax) , - Speed: Up to several Gbps , - Ports: Ethernet ports for wired connections , - Antennas: Internal or external, multiple for better coverage - Management: Web-based interface or	4	

	mobile app 450Mbps, 5.8G Outdoor Point to Point 2-3KM Long Range Access 14DBi High Gain Antenna RJ45 LAN Ethernet Dual Port		
TCP/IP LORA DTU	- Protocol: TCP/IP, LoRa (Long Range) , - Frequency Bands: 433 MHz, 868 MHz, 915 MHz , - Range: 5 to 15 km , SMA terminal Input 12 V to 24 V - Data Rate: 0.3 kbps to 27 kbps , - Power Supply: 5V DC , - Interfaces: RS232, RS485, Ethernet , - Enclosure: Weatherproof, IP65	2	
4G LORA DTU	- **Communication**: 4G LTE, LoRa, **433MHZ FREQUECY** **RANGE** 5 KM **GAIN** 22 DBM - **Interface**: RS232/RS485, Ethernet, - **Power Supply**: 9-30V DC, - **Data Rate**: Up to 1 Mbps (4G), Up to 27 kbps (LoRa), - **Operating Temperature**: -40°C to 85°C, - **Mounting**: DIN Rail or Wall Mount, - **Additional Features**: Remote Configuration, Data Encryption	6	
IIOT RS485 LORA	- **Communication**: RS485, LoRa, **433MHZ FREQUECY** **GAIN** 22 DBM **RANGE** 5 KM - **Interface**: RS485, Digital I/O, - **Power Supply**: 12-24V DC, - **Data Rate**: Up to 27 kbps (LoRa), - **Operating Temperature**: -20°C to 60°C, - **Mounting**: DIN Rail, - **Additional Features**: Long-range Communication, Remote Monitoring, Configurable Data Reporting	2	

SOLAR BACKUP for LORA Gateway	12V 24W Panel MPPT Charge Controller 12V 10Ah Lithium Battery Pack IP65 Housing	6	
GATEWAY HIGH GAIN ANTENNA	- **Connectivity:** Wi-Fi, Ethernet, Cellular - **Frequency Bands:** 2.4 GHz, 5 GHz, - **Data Rate:** Up to 1 Gbps, - **Power Supply:** 12V DC, PoE, - **Enclosure:** Rugged, IP67, - **Operating Temperature:** -20°C to 70°C	10	
GI POLE	GI pole 2 inches width Length as per customer location Mounts for solar panel, gateways sensors, CPE and camera	6	
IPCAM	- **Communication**: Ethernet, Wi-Fi, - **Resolution**: HD 1080p or 4K, - **Interface**: Ethernet, Wi-Fi, - **Power Supply**: PoE (Power over Ethernet) or AC Adapter, - **Operating Temperature**: -10°C to 50°C, - **Mounting**: Wall Mount, Ceiling Mount, outdoor - **Additional Features**: Night Vision, Motion Detection, Remote Access, Cloud Storage Integration	4	
SPECTRUM ANALYSER (Network Testing)	6Ghz Antenna Spectrum Analyzer Signal Source Wi-Fi 2G 4G LTE CDMA GSM **Wide frequency range:** 35 to 6200 MHz **Maximum span:** 6165 MHz **Bandwidth:** 200 kHz, fixed Logarithmic Periodic Antenna 0.1-12GHz Directional Antenna Positioning Direction Finding Spectrum Analyzer Near Field Probe Set for EMC Test	1	

Tender No. KRIC/NEC-iTBI/2024/15

Super Micro: Storage Server

Item	Specification	Quantity	Supplier Compliance (YES/NO)
Vertical Segment	Server	1	
Processor Number	4208		
Lithography	14 nm		
Cabinet	743TQ-865B-SQ		
Mother Bard	X11SPL-F		
CPU	2nd Gen Silver 4208 Single Processor		
Heat Sink	SNK- P0068AP4		
RAM	128GB DDR4 ECC		
HDD	16 TB SAS Drive		
Raid Card	LSI		
Total Cores	8		
Total Threads	16		
Max Turbo Frequency	3.20 GHz		
Processor Base Frequency	2.10 GHz		
Cache	11 MB		
Max # of UPI Links	2		
TDP	85 W		

Super Micro: Compute Server

Item	Specification	Quantity	Supplier Compliance (YES/NO)
Vertical Segment	Server	1	
Processor Number	6230		
Lithography	14 nm		
Cabinet	743TQ-1200B-SQ		
Mother Bard	X11DPL		
CPU	2nd Gen Gold 6230 Dual Processor		
Heat Sink	SNK- P0068AP4		
RAM	256GB DDR4 ECC		
HDD	4 TB SAS Drive		
Raid Card	N/A		
Total Cores	20		
Total Threads	40		
Max Turbo Frequency	3.90 GHz		
Processor Base Frequency	2.10 GHz		
Cache	27.5 MB		
Max # of UPI Links	3		
TDP	125 W		

GENERAL TERMS & CONDITIONS

Sl.No	Parameters	Specifications
1	Currency	INR
2	Delivery Schedule	Not later than twelve weeks
3	Delivery Terms	DDP Kovilpatti TN-India
4	Warranty	Three Years
5	Installation	On-site Installation and Operational Training by Authorized Engineer
6	Accessories	All adapters, cables, software and accessories for testing and calibration of equipment shall be supplied; no short supply will be accepted
7	Calibration Certificate	Accredited ISO 17025 calibration certificate where applicable shall be supplied and softcopy shared prior to despatch
8	Documentation	All technical documents such as Datasheets, Operational Manual, Service Manual, Schematics as applicable shall be provided along with supplied material
9	Notes on Format of Technical Proposal	1. Statement of Compliance as per specifications shall be provided along with the technical proposal 2. Bill of Material shall be provided for complete requirement as per respective tender document; shall not be accepted 3. Authorization Letter from OEM where applicable shall be attached along with the technical bid 4. Reference list of similar supplies in India shall be provided 5. Support plan for supplied products along with details of support hierarchy shall be provided
10	Notes on Format of Commercial Proposal	1. Itemized Commercial proposal shall be provided; non-itemized quotes shall not be accepted 2. Freight, Warranty, Calibration, Support and all additional charges shall be separately and clearly highlighted in the commercial Proposal 3. Optional items prices shall be highlighted separately as marked as OPTIONAL 4. No refurbished, reused item shall be supplied