



Sher-e-Kashmir
University of Agricultural Sciences & Technology of Jammu
Chatha, Jammu (J&K)- 180009

Short Tender Notice

On behalf of the Vice-Chancellor, SKUAST-Jammu, sealed tenders are hereby invited from the manufacturers, reputed and authorized distributors/ dealers/suppliers for purchase of Lab. Equipment as per details given hereunder –

Item No.	Name of the item with brief description	Qty.	Earnest Money Deposit (DD)	Cost of Tender Document (in Rs.)
1.	FRP Pools (Fibre Reinforced plastic) of Size:- 1500MM(L) x 1000mm(W) x 750mm (H)	15	Rs. 9000/-	Rs 1000/-
2.	Honeybee colonies (<i>Apis mellifera</i>) 10 frame with hives (complete hive)	205	Rs. 10000/-	Rs 1000/-
3.	'Multiparameter- Water Quality Analyzer'	01	Rs. 6000/-	Rs 1000/-
4	Visible Spectrophotometer	01	Rs 6000/-	Rs 1000/-
5	Fish Feed Mill/ Plant	01	Rs 5600/-	Rs 1000/-
6	Computerized Universal Testing Machine	01	Rs. 8000/-	Rs 1000/-
7	Hand Arm & Whole Body Human Vibration Meter	01	Rs 6000/-	Rs 1000/-
8	Test facility for Chemical composition of Soil engaging of Components (Multi CCD Spectrometer)	01	Rs 40000/-	Rs 1000/-
9	Computerised engine test set-up for testing of engines of self propelled machines	01	Rs. 36000/-	Rs 1000/-
10	Fork Lift	01	Rs.18000/-	Rs 1000/-

Date of submission of tender: 10-03-2021 to 20-03-2021 upto 2.00 PM

Date of opening tenders: 20-03-2021 at 3:00 PM

For detailed information, pl. visit website **www.skuast.org**

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Member Secy. (Equipments)
Central Purchase Committee

No: AUJ/CPC/20-21/496-98

Date: 10-03-2021

Copy to:

- Chairman CPC, SKUAST-J, Main Campus Chatha.
- SVC for timely Publishing of NIT in one local and one national daily for wide publicity.
- Incharge Data Centre for uploading on University Website



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Short Tender Notice

On behalf of the Vice-Chancellor, SKUAST-Jammu, sealed tenders are hereby invited from the manufacturers, reputed and authorized distributors/ dealers/suppliers for purchase of following items as per detailed specifications given in Annexure-II

Item No.	Name of the item with brief description	Qty.	Earnest Money Deposit	Cost of Tender Document (in Rs.)
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Pre-eligibility Conditions:

The Pre-eligibility Bid should be submitted in **separate sealed envelope** duly superscribed as **Pre-eligibility bid** which should contain the following documents:

- i. Copy of GST certificate.
- ii. Copy of PAN/TIN Card of the firm/ Authorized Dealer.
- iii. Undertaking of not being blacklisted by any Govt. Agency/ department.
- iv. List of clients presently being served (Agricultural Universities/ Educational Institutes/National Institutes/others separately in the last three years) with Contact name & address with mobile no.

- v. Certificate for successful completion of similar nature of work at any other organization.
- vi. Bank Details on letter head along with cancelled cheque.
- vii. Offers should be accompanied by a DD of Rs.1000/- (non-refundable) in favour of "**Comptroller, SKUAST-Jammu**" payable at Jammu towards the Tender fee.

Terms & Conditions

1. The tenders shall only be entertained on the prescribed form of the University. The tender shall be liable to be rejected if it contains mutilation, overwriting and corrections without due attestation by the tenderer.
2. No tender without earnest money in the shape of CDR shall be entertained. The CDR of tenderers shall be released within one month after the purchase process is finalized.
3. Conditional tenders shall be rejected out rightly.
4. The envelop in which tender is submitted must be superscribed as "Procurement of Laboratory Equipments with Item No. and name of the item(s) for which tenders have been submitted".
5. The specifications of the Laboratory Equipment should conform to the highest standards as per relevant BIS/ISO specifications.
6. Tenderers must state categorically whether or not their offer is exact to tendered specifications and indicate deviations, if any, failing which their offer will be ignored.
7. Tenderers shall enumerate the operational experience in similar environment of the equipment offered along with the names, addresses and other references of user's installations.
8. The competent authority i.e., SKUAST - Jammu reserves the right to revise or alter the specifications of the equipment before the acceptance of the tender.
9. Late, delayed and incomplete tenders and amendments and additions to the tender after opening of the same will not be accepted.
10. The Tenderers should include in their tender, provision for tools and initial stock of maintenance spares as are essential for proper operation and maintenance of the equipment. Full particulars of the spare parts should be provided separately.
11. The successful tenderer shall be responsible for erection and installation of the equipment at destination sites and for making it fully operational.
12. The tenderers must provide complete details of space and all infrastructural needs of the equipment which SKUAST-J should arrange before the arrival of the equipment in SKUAST-J to ensure its early installation and smooth operation thereafter.
13. The tenderer shall be fully responsible for the manufacture's warranty in respect of proper design, quality and workmanship of the equipment (s) accessories etc. covered by the tender for a period of 12 months from the date of satisfactory installation/commissioning of the system. The provision for extended warranty with terms and conditions thereof, if any, may also be specifically mentioned.
14. The tenderers shall make provision for imparting training to our scientists/ maintenance staff on operation and use of Laboratory Equipments, its accessories and trouble shooting repair and maintenance. Cost, if any, of such training and the details regarding the course covered and its duration should be specified.
15. The tenderer should enclose a certificate with the tender stating that
 - i) The equipment is of the latest technology.
 - ii) The equipment may be upgraded as and when required by SKUAST-J and
 - iii) The equipment shall be promptly and properly serviced by them whenever desired and such service will remain available to SKUAST-J for 05 years from the date of its installation.
16. Prices should be quoted in the Format as per Annexure – I and must be inclusive of transit insurance, freight, installation and commissioning at destination sites.

Discount, if any, should be shown separately. Additional charges on account of Excise Duty, GST, VAT, Entry Tax or any other charge / levy must be specifically quoted.

17. The offer should be valid for a period of 180 days from the specified date of opening of the tenders.
18. 100% payment shall be made on installation and commissioning of the equipment. However, the tenderer shall have to furnish a bank guarantee equal to 10% of the total cost of the equipment towards performance guarantee for one year which shall be released on successful completion of the warranty period.
19. The Tenders must reach in the office of the **Member Secretary (Equipments), Central Purchase Committee, Division of Agriculture Engineering, SKUAST-Jammu, Head Office, Main Campus, Chatha, Jammu-180009 (UT of J&K)** not later than the specified time as stipulated in the NIT, if the date on which the tenders are to be received / opened is declared as a public holiday, the tenders shall be received and opened on the next working day.
20. The tenderers and their authorized representatives are at liberty to be present at the time of opening of the tenders.
21. The competent authority of SKUAST-J does not bind itself/himself to accept the lowest or any tender & reserve the right of accepting the whole or any part of the tender or portion of the quantity offered and the bidders shall supply the same at the rate quoted.
22. The equipment to be supplied shall not pass to the SKUAST-J unless and until the equipment has been delivered, installed / commissioned and accepted, in accordance with the conditions of the contract and to the entire satisfaction of the competent authority of SKUAST-J.
23. The University shall not be responsible for any theft or loss sustained by the tenderer during the period of commissioning/installation. In the event of injury or mishap or illness to any of his worker, the University will not be responsible for any compensation.
24. The tenderer shall be fully responsible for any damage to the University property/ furniture, if any provided to them by the University.
25. All questions, disputes, or difference arising under and out of, in connection with the contract shall be subject to the Courts at Jammu (J&K).

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**Member Secretary (Equipments)
Central Purchase Committee**

No:

Date:

- Chairman CPC, SKUAST-J, Main Campus Chatha.
- SVC for timely Publishing of NIT in one local and one national daily for wide publicity.
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Head Office, Admn. Block Main Campus Chatha,
Jammu (J&K)- 180009

TENDER FORM

Cost of tender document received vide Bank Draft / Cash Receipt No. _____
Dated _____ for Rs. 1,000/-

Tender for: - Procurement of Laboratory Equipments

Earnest Money Amounting to Rs. _____ in the shape of Bank CDR /
FDR No. _____ Dated _____ of
_____ Bank enclosed.

To,
The Comptroller
SKUAST of Jammu
Chatha, Jammu.

I/We _____ S/o.Sh. _____

R/o _____ Prop. M/s _____

_____ hereby tender for _____ at

SKUAST-Jammu Main Campus Chatha and declare as under:

1. That I/We have sufficient experience for supply of laboratory equipments etc .
2. That I/We have carefully gone through the terms and conditions of the NIT and bind myself/ourselves to adhere to the quality and quantity parameters and rates.
3. That the rates quoted in the enclosed tender form have been written by me / us under my/our personal supervision and are firm.
4. That I/We shall be bound by the SKUAST of Jammu's instructions regarding quality and quantity of materials and other condiments.
5. That the revenue stamps worth Rs. 5/- have been affixed by me/us.
6. The rates quoted for each Laboratory Equipment are given as per Annexure-I

Name and address of the tenderer

FORMAT FOR QUOTING OF PRICES TO LABORATORY EQUIPMENTS
NAME OF THE EQUIPMENT _____

S.No.	Specification as per NIT	Specification of Quoting Firm	Name of the Firms with complete address/ Ph. No. Fax, etc	Unit Price (Rs. /€/£/\$)	Terms & Conditions
		Deviation if any between the Specification as per NIT and Specification of Quoting Firm _____ _____ _____		(a) cost of total unit _____ (b) Taxes _____ (c) Carrying forwarding, air freight, insurance, transportation charges, etc (item wise) _____ (d) Training cost (if any) _____ e) State Entry Tax if applicable _____ Total Cost at Jammu _____	FOR Mode of payment Delivery period Warranty

The prices to be quoted should be equipment wise and separate page should be used for every equipment. In addition to hard copies, tenderer should enclose one CD (soft copy).

Signature of the tenderer
(With Company Seal)

Annexure-II

Item No.	Name of the item with brief description	Qty.	Product Specification :-
1.	FRP Pools (Fibre Reinforced plastic) of Size:- 1500MM(L) x 1000mm (W) x 750mm (H)	15	<ul style="list-style-type: none"> • Should be made with Food and UV Resistant Grade Material with Isophthalic Unsaturated Polyester • 2- Wall thickness of 5.0mm. • Inside finishing: Gelcoat Finish (Mirror Like). • Lamination: Resin Laminates to contain a minimum Glass content of 40% using Fibre Glass Matrix of 450GSM Density. • Laminate should have a specific Gravity of 1.65 and exhibit a minimum tensile strength of 3700 NN/Sq Mtr. As per IS 1998. • Barcol Hardness should be of 45 as per ASTM 2583-81. • Water Absorption of not more than 0.20as per ASTM D 570. • Pools should be anti-algae. • Operating temperature resistance of up to 90 degree Celsius. <p>With provision of inlet, outlets and drains</p>
2.	Honeybee colonies	205	Bee colonies (<i>Apis mellifera</i>) 10 frame with hives (complete hive)

Item No. 3 Multiparameter- Water Quality Analyzer Quantity: 01

Technical Specifications:

Instrument Type	Multi- parameter measurement for pH, ORP, ISE, Optical Dissolved oxygen & Conductivity with user-defined combinations of equal or different parameters and Color graphic display with CMC, QSC and channel indicator. Should have optional adapter solution for conventional pH electrodes and internal memory for 10,000 records. Digital signal transfer eliminates electromagnetic interferences, allocates correct calibration data and provides sensor data. Should have intelligent sensor rating QSC which shows visually the actual condition of a pH electrode and increases operational reliability. Automatic digital recording of all sensor data for unique traceability of all values. Should have optional user administration for access control and documentation. Data output on PC, USB memory stick or selected printers.
Parameters	pH, mV, D.O.(saturation, concentration, partial pressure, BOD), conductivity (specific resistance, salinity, TDS), temperature
Digital/IDS sensor	Yes
Sensor channels	1 universal channel
Analog pH/ORP sensors	ADA S7/IDS
Temp. Compensation	all except ORP
pH Calibration points	1-5
pH Measuring range	0...14 pH
pH Temperature range	0 ... + 100 °C

pH Reference system	KCl 3 mol/l Ag+ free
pH Membrane shape	Cone
pH Diaphragm	Platinum wire
pH Shaft material	Glass
pH Shaft length	120 mm
pH Shaft diameter	12mm
pH Temperature probe	NTC 30 kOhm
pH Cable length	1.5m
Conductivity Calibration points	1
Conductivity Type	4 electrode
Conductivity Electrode material	Graphite
Conductivity Shaft material	Epoxy
Conductivity Shaft length	120 mm
Conductivity Cell constant	0.475 cm-1
Conductivity Diameter	15.3 mm
Conductivity Measurement range	1 μ S/cm to 2000 mS/cm
Conductivity Temperature range	0 to 100 °C
Conductivity Temperature sensor	NTC 30 kOhm
Conductivity min./max. immersion depth	36/120 mm
Conductivity Cable length	1.5 m
D.O. Calibration points	1
D.O. Method	Optical
D.O. Response time T99 (20 °C)	< 60 s
D.O. Measuring range concentration	0.00...20.00 mg/l \pm 0,5 % of measured value
D.O. Measuring range saturation	0.0 ... 200.0 % \pm 0,5 % of measured value
D.O. Measuring range partial pressure	0.0 to 400 hPa \pm 0.5 % of measured value
D.O. Temperature	0 ... 50.0 °C \pm 0.2 °C
D.O. Membrane shape	Chamfered
D.O. Shaft material	POM, stainless steel
D.O. Shaft length	140 mm
D.O. Diameter	15.3 mm
D.O. Cable length	1.5 m
Calibration memory	max. 10
Calibration timer	1 – 999 days
Memory - manual:	500 data sets
Memory - automatic:	4,500 data sets
Logger	Yes
Display	black and white graphic display
Optional printer facility	Yes
Others	CMC, QSC
Power supply	Universal power supply, batteries (4 x 1.5 V AA type)

Item No. 4 Visible Spectrophotometer**Quantity 01****Technical specifications**

Instrument Type	Pre-programmed Visible Spectrophotometers for Routine and Spectral Analysis (Instrument should be dedicated for water quality analysis) with proven AQA, covering the range from 320 to 1100 nm. Universal instrument suitable for all routine measurements with test kits, in service labs, industry, teaching and R&D.	
Measuring principle	Spectrophotometer with reference beam technology	
Light source	Lamp type	Tungsten halogen lamp
	Average lifetime:	approx. 1000 h
Monochromator	Type Grating	monochromator with step motor
	Wavelength range	320 - 1100 nm
	Max. scan speed	approx. 800 nm/min
	Wavelengths calibration	Automatic
	Accuracy	± 1 nm
	Reproducibility	$\pm 0.5 \pm$ nm (checkable, e.g. with holmium oxide filter)
	Resolution	1 nm
Photometric measurement	Spectral band width	4 nm
	Light sensor	Photo diode
	Measuring range	$A = -3.300$ to $A = +3.300$
	Linearity	$< 1 \%$ for $A \leq 2.000$ in the range 340 ... 900 nm
	Accuracy	$\pm 0.003 A$ for $A < 0.600$ $\pm 0.5 \%$ of the reading for $0.600 \leq A \leq 2.000$
	Reproducibility	± 0.002 at $A = 1.000$
	Resolution	$\Delta A = 0.001$
Usable cells	Scattered light	$< 0.1 \%$ transmission at 340 and 408 nm
	Round cells	– Outer diameter: 16 mm – Inner diameter: 13.6 mm – Flat cell bottom
	Rectangular cells	– Path length: 10 mm, 20 mm and 50 mm – Maximum width: 12.6 mm
	Cell recognition	Automatic for most types
Measuring modes	Concentration	– Measurement with permanently programmed methods, adapted to the test set program – Automatic method selection if test sets with barcodes are used – Program support for the creation of additional user-defined methods (max. 100) – Citation forms and units method dependent – Display of the absorbance value can be added – Method data update possible via Internet
	Absorbance / % Transmission	– Measurement against own reference absorbance value possible
	Multi wavelengths	– Freely definable calculations from absorbance

		values at up to 10 different wavelengths – Calculations can be stored as methods (max. 499)
Measuring modes	Spectrum	– Absorbance or % transmission mode – Limits freely selectable within the wavelength range – Increment: 1 nm – Recording duration for the complete wavelength range: < 7 min – Settings can be stored as profiles (max. 20) – Evaluation functions: Cursor scanning, zoom, min./max. recognition, peak area determination, derivation, smoothing, multiplication by constants, addition of constants, addition and subtraction of spectra, formation of the quotient of two spectra
	Kinetics	– Absorbance or % transmission mode – Minimal adjustable scan interval: 1 s (if the absorbance of the test sample is high, the scan interval is extended due to the longer duration of the individual measurements) – Settings can be stored as profiles (max. 20) – Evaluation functions: Cursor scanning, zoom, min./max. determination, slope calculation (for an interval or total), enzymatic activity
	Memory capacity	– 5000 single measured values from the measuring modes, concentration, absorbance / % transmission and multi wavelengths – 40 MByte internal memory, sufficient for approx. 500 spectra and 400 kinetic curves (sample values based on the following assumptions: All spectra over a wavelength range of 600 nm and all kinetic curves with 150 single values each)
	Output options	USB memory device, printer, PC
	File formats	ASCII, *.csv
	Housing type of protection	IP 30
	Electrical protective Class	III
	Test certificates	CE
	Power supply	Type: EDACPOWER EA1036R Input: 100 - 240 V ~ / 50 - 60 Hz / 1 A Output: 12 V = / 3 A (In compliance with Eco-design directive 2009/125/EC, EuP step 2)
	IP protection class	EN 60529
	USB	– 1 x USB-A (for printer, USB memory devices, keyboard or bar code reader) – 1 x USB-B (for PC)
Warranty	Onsite Warranty	2.0 years

<p>Other technical specifications for Spectrophotometer (physical demo may be invited, if felt required)</p>	<p>a. Please confirm whether your Spectrophotometer works on reference beam technology with fast and cost-effective routine analysis with AQA for wastewater, drinking water, environmental monitoring, and monitoring authorities as well as special procedures for environmental parameters such as chlorophyll or industrial fish farming.</p> <p>b. Please confirm whether your Spectrophotometer has Inbuilt methods (>200) including special procedures such as free Ammonia, CO₂, COD, TOC, ADMI / APHA 2120F color measurement, Chlorophyll-a as per DIN, Chlorophyll-a as per ASTM, Chlorophyll-a, -b, -c as per ASTM, Glucose, TSS (total suspended solids), Direct methods such as SAC, UVT, coloring, chlorophyll, brewing trade, etc</p> <p>c. Please confirm whether your Spectrophotometer has PC-controlled color measurement for ADMI color number; ASTM; Gardner; Sugar color ICUMSA; Beer color as per EBC and ASBC; Iodine color number.</p> <p>d. Please confirm whether your Spectrophotometer works on 12 V power supply unit (e.g. portable power source or car battery) / vehicle connection cable for mobile operation with facility to accommodate in the field case for field analysis.</p> <p>e. Please confirm whether your Spectrophotometer has USB – 1 x USB-A (for printer, USB memory devices, keyboard or bar code reader); 1 x USB-B (for PC); Interface/update 1 USB-A, 1 USB-B, 1 Ethernet / Update via Internet and USB stick</p> <p>f. Please confirm whether your Spectrophotometer meets IP Class IP 30 including drainage in optical compartment; EN 60529, EMC: EC directive 2004/108/EC; EN 61326-1; Interference immunity: IEC; 61000-4-3; Tolerance extension: 0.008 E; FCC Class A; Meter safety: EC directive 2006/95/EC; EN 61010-1</p> <p>g. Please confirm whether your system has CE certification.</p>
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Item No. 5 Specification for Fish Feed Mill/ Plant

Quantity 01

SNo.	Item	Specification
A.	Crusher Quantity	Power: 3.0 hp Capacity: 30-50 kg/h Size: 12 inch Type: Hammer blades Motor: Crompton
B.	Mixer	Power: 1.0hp Capacity: 30-50 kg/h Mixing time: 10 min./batch Size: 600x300x450 mm or big Type: Ribbon Blender Motor: Crompton
C.	Feed Pellet Extruder	Main Power- 3 hp or more Output Capacity- 25 or more Kg/hr Cutter Power- 0.25 hp Heating Power- 1 KW (minimum) Feeding Motor- 0.25hp (minimum) Extruder die – 4 die's with machine (2 no each) Motor: Crompton

D	Complete Installation	With Starter, Spare parts, and Electric material/Controller, etc.
E	Transportation	FOR SKUAST-Jammu, Chatha

Sr.No.	Name of the machinery/equipment	Specifications duly vetted by relevant purchase committee (Faculty level/division level/project level/station level etc.)
6	Computerized Universal Testing Machine Quantity 01	<p>It should be able to perform the:- (a)Tensile (b) Compression (c) Shear (d)Flexural, and (e) Low Cyclic Test, for a wide variety of materials and components.</p> <p>Measuring capacity: 100 Kn, measuring range: 0-100 Kn, Least count: 5 N, Load range in Kn Resolution of piston movement 0.01 mm, Maximum tensile clearance at fully descended piston position: 50-700 mm, Maximum clearance for compression test: 0-700 mm, Distance between columns: 450 mm, Piston stroke: 150 mm, Max. training speed at no load: 300 mm/min, Power supply: 3 Phase, 415 V, 50 Hz, AC., HP(Total): 1.5, Standard accessories: Pair for compression plate dia: 120 mm, Tension Test jaws (For round specimen dia: 10-20 mm, For flat specimen thickness dia: 0-10 mm), Transverse Test (Adjustable roller support width: 150 mm, diameter: 30 mm, With maximum adjustable clearance: 450 mm, Punch top radius: 6-12 mm Set of foundation bolts and levelling screws. Electronic Extensometer for Computerized version Data Acquisition Panel</p> <ol style="list-style-type: none"> 1. A Microcontroller based data acquisition system for data acquisition & indication. 2. LCD displays for displaying load & crosshead travel value. 3. Tare load & reset elongation facilities available. <p>Operation Unit: The operation unit shall have the following function: Test Force Calibration Function Break Detection Function Automatic Read Function For Load Cell Characteristic Value Peak/Break Value Display Function Cycle Figure Display Function</p> <p>Test Condition File Function, minimum 15 files. Real Time S-S Curve Display. Software: The software shall have the following features: The software shall support latest window based operating system. The software shall comprise with the tests:- Tension, Compression, Three-point Bending, Four-point Bending, Peel, Friction. The software shall have real time curve plot. The software shall have data analysis mode. Processing Unit A set of computerized data processing and recording system interfaced with the controller consisting of: Desktop (Windows 10 Home 64, 6th Generation Intel® Core™ i5 processor, 8 GB memory; 1 TB HDD storage, Intel® HD Graphics 530), 2 USB 3.0; 4 USB 2.0, USB optical mouse, USB black keyboard Printer : Colour Laser Jet (Print speed upto 38 ppm)</p>

		<p>Installation: Installation, Mounting & Erection, Wiring, Commissioning and necessary civil work Etc. will be done by the supplier.</p> <p>INSTRUCTION MANUAL: Technical manual which describes the equipment and experimental procedure</p>
7	<p>Hand Arm & Whole Body Human Vibration Meter</p> <p>Quantity 01</p>	<p>Including 1/1 & 1/3 Octave Analysis Includes: SC 56 USB cable, 4 x AA batteries, SC 118 integrated connector, 1/1 & 1/3 Octave Analysis, SV 105 Hand-Arm adapter with triaxial accelerometer, SV 38V Whole-Body seat accelerometer, Micro SD card 2GB, CD with instruction and Software and Carrying Case.</p>
8	<p>Test facility for Chemical composition of Soil engaging of Components (Multi CCD Spectrometer)</p> <p>Quantity 01</p>	<p>Spectra Analytical Resolution: 3600 lines/mm and above Focal length: 300mm or above Number of detectors (CCD): 5 or above. Calibration required: Fe base MS/C/LAS & CI/SG iron alloys, SUS Samples Included Online Service Support: Java.net online service Standardization: Single sample, Power Consumption: 30W Standby 800W Sparking or equivalent Items to be included: Grinder for Spectrometer, Argon Regulator, Online UPS 2KVA with 1 Hr Backup and Core i5 complete desktop with suitable OS, 4GB RAM, DVD Writer, 1TB HDD, DVD, Monitor: 21" wide LED TFT, Keyboards, optical mouse, Windows 7/8/8.1 Professional pre-loaded, Preloaded software, Antivirus (latest version), online UPS 2KVA with 1 Hr Backup suitable Licensed Windows 7 or above Software. Ink jet colour printer USB 2.0/3.0 Port Cooling System: 1.5 Ton split AC dual cooling and hot with Installation and 4 KVA Stabilizer</p>
9	<p>Computerised engine test set-up for testing of engines of self propelled machines</p> <p>Quantity 01</p>	<p>Computer based engine test rig for test of various engines used in self propelled agricultural machinery 5-6 hp capacity Engine : 4 stroke single cylinder diesel engine 5 hp and 2 stroke petrol engine Dynamometer : The Engine is coupled with matching Eddy current dynamometer and capable to couple with 4 stroke diesel engine and 2 stroke petrol engine with required accessories. Torque Measurement: With Load Cell. 1. Eddy Current Dynamometer (Water Cooled)</p> <ul style="list-style-type: none"> • Rated absorption Power = 5 KW / 6.7 HP • Maximum torque = 15 Nm or More. • Maximum Torque at Speed = 2500 RPM • Maximum speed = 12000 RPM • Torque measurement precision = ± 0.25 FS%, 0.1 Nm resolution • Speed measurement precision = ± 0.5 FS %, 1RPM resolution • The direction of rotation both Clockwise & Anti Clockwise. • Reaction type Torque Sensor to measure Torque, having 2 mV/V

		<p>output.</p> <ul style="list-style-type: none"> • 60 - Tooth wheel with magnetic pick up sensor to measure speed. • Torque calibrating arms and weights • Electro-less Nickel plating on water passages (groove side) of loss plates to ensure that corrosion does not detract from performance. • Magnetic heavy duty water strainer - filter. • Water Inlet Pressure Switch. <p>2. Dynamometer Controller:(Control Panel mounting stand onground floor), Consisting of:</p> <ul style="list-style-type: none"> • Dynamometer Multi Mode Control Unit • Pot for variable loading of Engine. • Multi-mode operation push buttons facilitating • Constant Speed • Constant Torque & • Open Loop modes of operation. • Size of rack: 19” Rack type. • The controller would be provided with SET OVERSPEED • facility, SET RUN <p>MODE Selection and RESET / START & STOP switch.</p> <ul style="list-style-type: none"> • Analogue/Digital Speed Indicator & Digital Torque Indicator Rack • Accuracy: Analogue speed: $\pm 1.5\%$ of FSD • Digital torque: $\pm 0.25\%$ of FSD ; Digital speed: ± 1 rpm • An Isolator Switch Panel • 2 Nos. Blind Temps. Controllers as inbuilt safety against overheating of loss plates of the dynamometer • PID Temperature Indicator Controller to indicate Engine Lub Oil Temp. & Air Intake Temp, Fuel Temperature, Dynamometer Water Outlet Temp (All 0 - 200°C) with Temp Sensors PT 100: Qty. 4 Nos. • Exhaust Gas Temp (0 - 1000°C) – 1 No. Temp Indicators with CRAL sensors. • Air Intake Pressure Indicator with Sensor (0 to 70 mbar) :Qty. 1 No. • Engine Exhaust Back Pressure Indicator with Sensor (0 to 70 mbar) Qty. 1 No. • Digital Time Totalizer - 1 No. <p>3. Data Logging Facility: PC Based, Data Acquisition & Control system.</p> <p>Consisting of:</p> <p>Computer: Intel core i5 processor, 3.00 GHz or more, Intel stable image platform program (SIPP), Memory: 8 GB, Hard disk drive: 1 TB HDD, Monitor: 21” wide LED TFT, Keyboards, optical mouse, Windows 7/8/8.1 Professional pre-loaded, Preloaded software, Antivirus (latest version), 3 years comprehensive H/W warranty, complete with HP inkjet Color Printer. PCI Card with necessary</p> <p>Digital & Analogue inputs & outputs. Facility to View / Print observation table and save the acquired data .</p> <ul style="list-style-type: none"> • Software package for logging the engine test results. <p>4. Cable loom with conduit of 10Mtr length: Cable loom consist Shielded Control cables for Torque sensor, Speed sensor, Temp & Pressure sensors & Dynamometer Control, with Male-female</p>
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		<p>roundtype connectors with flexible conduit of length of 10Mtr.</p> <p>5. Suitable Engine Mounting Stand on Common Base Frame for Engine & Dyno.</p> <p>6. Torsion Coupling: Between Engine & Dynamometer with Guard.</p> <p>7. Volumetric Fuel Consumption unit along with Calibration Set Up:</p> <p>Glass tube assembly (5 + 10 cc) is housed in MS fabricated enclosure with top and bottom supports. Photo sensors are fitted on Glass tube, to regulate specific volume of fuel required during testing.</p> <p>Digital timer (with suitable interface to connect with PC based system) is provided for indication time in seconds for the selected volume of fuel. Least count of timer is 0.1 second. Measurement Accuracy: 0.5% of selected volume whichever is more quantity.</p> <p>3 years hardware and service warranty at SKUAST-J, Jammu</p> <p>Installation: Installation, Mounting & Erection, Wiring, Commissioning and necessary civil work etc. will be done by the supplier.</p> <p>INSTRUCTION MANUAL:</p> <p>Technical manual which describes the equipment and experimental procedure</p>
10	Fork Lift Quantity 01	Capacity 3000Kg, 4 Cylinder diesel engine operated, 45-50 bhp, lift height 3 to 3.8 metres fitted with pneumatic tyres. Gradability 28%

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Member Secy. (Equipments)
Central Purchase Committee