

# J&K Agro Industries Development Corporation Ltd. Gole Pully, Talab Tillo Jammu.

E-mail Id – dmjkagrojammu@gmail.com

E NIT No. 85 of 2021-22 JK Agro

**E-NIT NO: -Agro/DM/PSJ/6055-57**

**DATED:-07.02.2022**

For and on behalf of J&K Agro Industries Development Corporation Limited, bids are invited from Registered Principal Manufacturers/Authorized Dealers/Suppliers having valid license/ Registration for annual rate contract of following Agriculture machinery items. J&K Agro industries Development Corporation is having a procurement and sales division which procures and supplies Agricultural machineries to Agri. and allied Departments to meet the demands of various Govt Depts during the financial year. Corporation intends to finalize the Procurement Purchase arrangements through this E-tender. After completing the process of Annual Rate Contract through E-tendering, the Corporation places the supply order to successful bidder as per the specification and brand as received from the intending departments.

S. No	Name of item.	Amount of CDR (inRs.)	Cost of Tender Documents (inRs.)	Date and time of opening of bids (online)
1.	Procurement of <b>Laboratory Equipments</b> (one time purchase) (detailed specifications are in the attached BoQ) (Equipments for which the bidder is quoting the rates must fulfill the specifications as per the Annexure "C")	20,000/-	2,000/- (Non-Refundable)	23.02.2022

1. The Bidding Document Consisting of qualifying information, eligibility, criteria, Specification, set of terms and condition of contract and other details can be seen/downloaded from the departmental website [www.jktenders.gov.in](http://www.jktenders.gov.in) as per the schedule of dates given below:-

1	<b>Date of Issue of NIT</b>	07.02.2022
2	<b>Period of downloading of bidder documents</b>	07.02.2022 to 22.02.2022 til 12:00 hrs
3	<b>Bid submission Start date</b>	07.02.2022
4	<b>Bid submission End date</b>	22.02.2022
5	<b>Date and time of opening of Technical bids (online)</b>	23.02.2022
6	<b>Date and time of opening of Financial bids (online)</b>	After the complete Technical Evaluation of documents of all participated bidders

2. **Bids must be accompanied with cost of tenders' documents in shape of Bank Receipt in f/o J&K Agro Industries Development Corp. Ltd bearing J&K Bank Acc No CD-0097010100000961, IFSC Code- JAKA0TNHALL, Earnest money/bid security in the shape of CDR/FDR Pledged in favour of Managing Director J&K Agro Industries Development Corporation Limited.**
3. **The date and time of opening of bid shall be notified on website [www.jktenders.gov.in](http://www.jktenders.gov.in) and convey to the bidder automatically through an e-mail message on their mail id. The bids of**

responsible bidders shall be opened online on same website in the office of **Managing Director J&K Agro Industries Development Corporation Limited. (Tender receiving authority).**

4. **The earnest money shall be fortified if.**

- a) Any bidder/ tenderer withdraw his bid/ tender during the period of bid validity or make any Modifications in the terms and conditions of the bid.
- b) Failure of Successful bidder to execute the agreement within 07 days after fixation of contract.

5. **Instruction to bidders regarding e-tendering process.**

- 5.1 Bidders are advised to download bid submission manual from the "Downloads" option as well as from "Bidders Manual Kit" on website [www.jktenders.gov.in](http://www.jktenders.gov.in) to acquaint bid submission process.
- 5.2 To participate in bidding process, bidders have to get 'Digital Signature Certificate (DSC) as per Information. Technology Act-2000. Bidders can get digital certificate from any approved vendors.
- 5.3 The bidders have to submit their bids online in electronic format with digital Signature. No bid will be accepted in physical form.
- 5.4 Bids will be opened online as per time schedule.
- 5.5 Bidders must ensure to upload scanned copy of all necessary documents and complete address and contract no. with the bid. Besides, original/Photocopies of documents related to the bid are submitted physically only by L-1 bidder.

**Note: - Scan all the documents on 100 dpi with black and white option.**

6. **The department will not be responsible for delay in online submission due to any reasons.**

7. Scanned copy of **cost of tender document** in shape of Bank Receipt and Earnest Money/Bid Security in shape of CDR/FDR pledged to **Managing Director J&K Agro Industries Development Corporation Limited** must be uploaded with the document of the bid.

8. Bidders are advised to use "**My Documents**" area in their user on [www.jktenders.gov.in](http://www.jktenders.gov.in) portal to store such documents as are required.

9. **The technical Bid must consist of following information and documents.**

9.1 All bidders shall include the following information and documents with their bids:-

- (a) Copy of Place of registration and principal place of Business, with complete address and contact details.
- (b) Copy of Principal manufacturer certificate/dealer certificate.
- (c) Copy of GSTIN No. Number
- (d) Copy of PAN Number.
- (e) Copy of Latest GST return file shall be furnished.
- (f) Copy of EMD/FDR.
- (g) Copy of cost of document (COD)
- (h) Test report of ISI mark/BIS
- (i) Notarized Affidavit as per annexure-A
- (j) Notarized Affidavit as per annexure-B
- (k) MRP of the products in BOQ must be enclosed separately.
- (l) **Bidder should also mention the MRP of the product he/she is bidding for on the letter head of the firm of concerned bidder.**

9.2 All documents relating to the bid shall be in the English Language.

9.3 **It is mandatory for all bidders participating to submit all documents in terms of soft copies in e-tendering website and no documents in terms of Hard Copies shall be entertained. However, lowest bidder will be called for submission of CDR/FDR as well as DD and CDR/FDR of the other participating tenderers/ bidders will be released only after surrender of DD.**

10. If the bidder does not quote rate for any item of the rate list/quantity schedule, such item/items shall be deemed to be part of the overall/total contract value and no rate shall be allowed for such item/items in the allotment contract.

11. **General conditions of contract:-**

- a) The Tender documents duly signed with seal on each page in token of acceptance of all terms and conditions of Tender should also be enclosed.

**Note:**In case the above mentioned documents are not enclosed, the tender can be rejected as per the decision of the Purchase Committee.

1. The firm shall have to certify that the rates quoted by them are the lowest rates and has not quoted rates lower than these rates to any Govt. Deptt. /Agency in J&K for the similar items / Stores. If at any stage it is proved that the prices charged by tenderer are higher than the prices quoted to other Departments or higher than the prevailing market rates in JK UT the tenderer shall be liable for prosecution under law and the excess amount charged thereof shall be recovered from your bill/securities etc. All the bills shall be settled at the market rates only vetted by Purchase committee.

2. In case the firm fails to supply ordered items, within the stipulated period, the CDR/ Security Slip shall be forfeited and supplier shall have no claim for its refund / release in any manner. Besides, the firm shall be black-listed for future business with JK AIDCL.

3. **Guarantee / Warrantee:**

The material should be guaranteed for a period of 12 months against any manufacturing defects. In case of any complications/ defects, the complained has to be attended immediately and defective items shall be replaced at your cost. Failure in the compliance of this can cause in the forfeiting of the Security Deposit.The bidder should mention the location of the work shop and should be in a position to service the equipment at site.

4. Rates quoted shall be F.O.R. Jammu/ Kashmir Division of the concerned indenting department at block/tehsil/District level.

5. **Validity of Rates:-**

The rates quoted by the suppliers shall remain valid up to one year and inclusive of all taxes and thereafter shall be extended on mutual agreement. (i.e. uptill 31.03.2022)

6. Dealership Certificate and Test Report.

The firms, which are not Principal Manufacturer and are submitting tenders, are required necessarily to attach a valid Dealership Certificate from Principal manufacturer and test report from ISI Mark/BIS / any other recognised institute authorised by Govt. of India/registration certificate from DIC Department.

8. **Payments:**

Payments shall be made after the payment has been received from the indenting Deptt. and on receipt and verification of the material by the indenting Deptt.

9. **Agreement:**

The successful firms shall have to execute an agreement in the prescribed format within seven days from the date of intimation to this effect.

10. **Delivery schedule**

The material should be supplied within 15 days or as per the terms of Supply Order.

11. **ARBITRATION**

In case of dispute of any nature arising while servicing the ordered items, the matter shall be referred to the Managing Director, JK AIDCL whose decision as arbitrator shall be binding for the resolution of the dispute. In case the matter cannot be resolved further, in that situation, the legal

**institution / Courts of the J&K State shall be the alternative forum for dispute resolution.If there is any deviation from the specification of the product (test reports), all the penalties in such case will be applicable on the supplier/ bidder only.**

12. Submission of offer

. The tenders shall be opened on the date mentioned in above table 2 at same office in presence of the tenderers who wish to be present or any subsequent date convenient to Purchase Committee.

13. Managing Director, AIDCL reserve the right to accept or reject any or all tenders in part or full without assigning any reason thereof.

14. As soon as the acceptance of tenders is conveyed to the successful firm the contract shall be final and binding upon the successful firm and agreement deed shall have to be executed with the Corporation by the supplier within 7 days from the date of issue of letter of acceptance.

15. The Purchase committee, after the approval of the MD JK AIDCL, reserves the right to accept or reject any tender, part of a tender or all tenders without assigning any reason thereto.

16. The tenderer along must also submit a soft copy of its latest Income Tax/GST Clearance Certificate

17. Tender without payment of tender cost shall be rejected.

18. The offer should be signed by the authorized person and his full name and status should be indicated below his signature.

19. The tender should be accompanied with the Technical literature/Boucher/Pamphlets of the products.

20. **Corporation reserves the right to carry out market survey also to assess the lowest market rate of the items. However, the lowest market rate shall be offered to tenderer for acceptance on rate contract basis and the bidder shall have no objection for it.**

21. Force Majeure:

If the completion of the supply is delayed by strikes, lockouts, fire accidents, war or any other cause beyond the control of the supplier and the supplier satisfies the Corporation by a documentary proof in that respect, a reasonable extension in the time limit may be granted by the Corporation without effecting or decreasing/increasing the basic price as per force Majeure clause of the agreement. However, damages caused due to strikes, rain or snow shall not constitute an act of God.

22. **Third Party Inspection**

**The corporation reserves the right to get the material, machinery and complete line inspected by third party to ensure the material supplied in exactly as per specification mentioned in the tenders' documents for those particulars machine/items.**

23. An Affidavit on Rs.100 non judicial stamp paper that price charged for supplies under contract shall under no circumstances exceed the lowest price at which the contractor sells identical description to any Govt. Department/Institution/Public Enterprises/Undertaking during the period of contract as per Performa attached in Annexure-A.

24. An Affidavit on Rs.100 non judicial stamp paper that the company/firm has not been neither black listed nor de-barred from participation in tender by any of the Govt.Department/Organisation/ PSU etc as per Performa attached in Annexure-B.

Sd/-

**Divisional Manager (P&S)  
Member Secretary,**

**J&K Agro Ind. Dev. Corpn.Ltd.**  
**Procurement & Sales Division, Jammu**

**Copy to.**

1. Managing Director, JKAIDCL, Jammu for Kind information please.
2. Director Finance JKAIDCL, Jammu for Kind information please.
3. Divisional Manager, P&S, Kashmir for kind information.
4. Office File.

**JK AGRO INDUSTRIES DEVELOPMENT CORPORATION LTD.**

Annexure-A

Affidavit Certificate

I/We \_\_\_\_\_ (Name, Designation and Address)  
here by declaring that price charged for quoted item/items under this contract, our firm has no  
circumstances exceeded lowest price of identical goods given to any Govt.  
Department/PSUs/Institutions/Organizations, Open Market in UT of J&Ketc during current year.

Signature of Authorized Signatory \_\_\_\_\_

Name \_\_\_\_\_

Designation \_\_\_\_\_

Name of the Firm/Company \_\_\_\_\_

Full Address \_\_\_\_\_

Stamp \_\_\_\_\_

Place: \_\_\_\_\_

Dated: \_\_\_\_\_

**JK AGRO INDUSTRIES DEVELOPMENT CORPORATION LTD.**

Annexure-B

Affidavit Certificate

I/We \_\_\_\_\_ (Name, Designation and Address)  
here by declaring that our firm/company has not been neither blacklisted nor de-barred from  
participation in tender by any Govt. Department/PSUs/Institutions/Organizations etc. I/We had  
supplied the goods during the last three years.

Signature of Authorized Signatory \_\_\_\_\_

Name \_\_\_\_\_

Designation \_\_\_\_\_

Name of the Firm/Company \_\_\_\_\_

Full Address \_\_\_\_\_

Stamp \_\_\_\_\_

Place: \_\_\_\_\_

Dated: \_\_\_\_\_

Sr.No.	Name of the machinery/ equipment	Specifications duly vetted by relevant purchase committee (Faculty level/division level/project level/station level etc.)
1.	Piezo Sensor based Smoke Meter for IC Engines	<p>Smoke meter to measure the Opacity of Smoke with RPM measured by Piezo method, RS 232, Probe and standard accessories.</p> <p>Specification :</p> <p>Measurement: Smoke density in HSU &amp; K ; RPM &amp; Oil Temperature,</p> <p>Range : HSU : 0 – 99.9, RPM : 0 – 6000, Oil Temperature : 0 – 150°C</p> <p>Resolution: HSU : 0.1%, K : 0.01m RPM : 1 ( for piezo), 10 (for Battery), Oil Temperature : 1°C</p> <p>Light Source &amp; Detector: LED &amp; Photocell.</p> <p>Display: 16x2 Alphanumeric LCD display with backlight.</p> <p>Warm up Time : &lt; 20 minutes ( smoke column heating), Electronics (&lt; 2min). Temperature Sensor : RTD (PT 100) &amp; Thermocouple. Data Communication</p> <p>RS 232 Interface for Computer connectivity.</p> <p>Printer: 24 Column Dot Matrix type Printer.</p> <p>Operating Temperature: 0 to 50°C. Measuring Chamber Temperature : 80°C</p> <p>INSTRUCTION MANUAL: Technical manual which describes the equipment and experimental procedure</p>
2.	<p>Computerized Universal Testing Machine</p> <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:</p> <p>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</p> <p>Set of foundation bolts and levelling screws. Electronic Extensometer for Computerized version Data Acquisition Panel</p> <ol style="list-style-type: none"> <li>1. A Microcontroller based data acquisition system for data acquisition &amp; indication.</li> <li>2. LCD displays for displaying load &amp; crosshead travel value.</li> <li>3. Tare load &amp; reset elongation facilities available.</li> </ol> <p>Operation Unit: The operation unit shall have the following function:</p> <p>Test Force Calibration Function Break Detection Function Automatic Read Function For Load Cell Characteristic Value Peak/Break Value Display Function Cycle Figure Display Function : Test Condition File Function, minimum 15 files. Real Time S-S Curve Display.</p> <p>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</p> <p>A set of computerized data processing and recording system interfaced with the controller consisting of: Desktop (Windows 10 Home 64, 6<sup>th</sup> Generation Intel® Core™ i5 processor, 8 GB memory; 1 TB HDD storage, Intel® HD Graphics 530), 2 USB</p>



		3.0; 4 USB 2.0, USB optical mouse, USB black keyboard Printer : Colour Laser Jet (Print speed upto 38 ppm) Installation: Installation, Mounting & Erection, Wiring, Commissioning and necessary civil work Etc. will be done by the supplier. INSTRUCTION MANUAL: Technical manual which describes the equipment and experimental procedure
3.	Performance and Endurance test rig for Knapsack sprayer/ Hand pump sprayer (As Per BIS Standard)	Mounted on M.S. Structure dully powder coated. Unit Comprises of M.S. Frame Stand, Pressure gauge accumulator for reducing damping effect of pressure gauge, Suction & discharge pipe, Sump Tank & measuring Tank, ½ HP Gear motor for constant stroke speed, Digital counter for stroke measurement, Arrangement for attaching pressure assembly to Knapsack/ Hand Sprayer Tank Sprayer Pump Pressure Gauge Main Switch
4.	Performance and Endurance Test Rig for Foot and Rocker Sprayer as Per BIS Standard	Mounted on M.S. Structure dully powder coated. The Unit should comprise of Foot or Rocker pump mounted on MS Frame for Testing, Pressure gauge accumulator for reducing damping effect of pressure gauge, Suction pipe & discharge pipe, ½ HP Gear motor for constant stroke speed, Hand valve arrangement for changing pump, Sump & Measuring Tank, Main Switch, Stop clock
5.	Strap Drop and Tank Impact Test rig as per BIS Standard	Mounted on M.S. Structure dully powder coated. Unit should Comprises of M. S. Metallic Fabricated Frame, Double Acting pneumatic Cylinder's 3 No., Canti Leaver Assembly, Belt Assembly, Test Tank Assembly, Limit switch, Pressure gauge, Flow Control Valve, Electro Pneumatic Solenoid Valve Air Compressor
6.	Reciprocating Pump Test Bench (as per BIS Standard)	Mounted on M.S. Structure dully powder coated. The Unit should Comprises of Reciprocating Pump of 1 HP single phase 1500 rpm with a 4A dimmer stat, Vacuum Gauge at suction line, Pressure Gauge at Discharge line, Measuring input to elect Motor by Energy meter, Output of Pump performance can be estimated at three different speed by using pulley, Recirculation type unit, M. S. Stand Assembly, Measuring Tank of Size : 500 x 400 x 400mm with FRP Coated, M.S. sump Tank 900 x 600 x 600mm
7.	Test rig for Leakage Test For Delivery Line of agriculture sprayer as per BIS	Mounted on M.S. Structure dully powder coated comprises of : 1 HP HTP Pump, • 3 phase 1500 rpm Motor with starter, Air compressor assembly, Air filter, Pressure gauge, regulator with pressure gauge, Pneumatic cylinder, Solenoid Valve, limit switch, Nozzle sprayer assembly, Sum Tank, Hand valve, Separate line for leakage purpose
8.	Test Rig for Fatigue on Compression Sprayer	Mounted on M.S. Structure dully powder coated. The Unit should Comprise of M.S. Fabricated Stand, Air Compressor single cylinder single phase, Air filter, Solenoid Valve, Three way valve, Limit switch, Pneumatic cylinder, Digital counter for stroke measurement with timer, Pressure Gauge, Three separate line for three Nozzle
9.	Test Rig for Trigger Type cut off device (As Per BIS Standard)	Mounted on M.S. Structure dully powder coated. The Unit should Comprise of M.S. Fabricated Frame 1000 X 700 X 1500 approx., Air Compressor Single Cylinder Single Ph , Single acting Pragmatic Cylinder, Pressure Regulator, Pressure Gauge, Limit Switch, Electrical Cut Out (6A) Solenoid Switch, Spray Nozzle, Unit Will Powder Coated, STP Pump with Pipe Assembly
10.	Test rig for Spray Launce Pressure Test Rig (as per BIS Standard)	Mounted on M.S. Structure dully powder coated. The Unit should Comprises of M. S. Fabricated Stand Assembly, 1 HP DC Motor, 4 A, DC Dimmer Assembly, Cam and Flange Assembly, Connecting rod Assembly, Electrical Switch, Air Foot Pump
11.	Test Set Up of Mist Blower as per BIS standard	Mounted on M.S. Structure dully powder coated Round type duct, Pitot Tube, U Tube manometer, Blower switch, Single phase 3/4 HP centrifugal blower, Orifice meter
12.	Test Rig for Spray pimp for Centrifugal Pump as per BIS	Mounted on MS Structure dully powder coated. The unit should consist of Multi stage Centrifugal pump,

	standards	Vacuum gauge at suction line, Pressure gauge at discharge line, Input measured by three phase energy meter, Output of pump performance can be estimated at 3 difference speed by using V belt pulley, Three HP AC Motor with starter, MS tank of size : 1000 x 800 x 600mm with FRP Coated, Measuring Tank of size : 600 x 500 x 400mm with FRP Coated
13.	Hand Arm & Whole Body Human Vibration Meter	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.
14.	Multi CCD Spectrometer for Soil engaging tools	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. <b>Ink jet colour printer</b> <b>USB 2.0/3.0 Port</b> <b>Cooling System:</b> 1.5 Ton split AC dual cooling and hot with Installation and 4 KVA Stabilizer
15.	Computerized engine test set-up for testing of engines of self propelled machines	<b>Computer based engine test rig for test of various engines used in self propelled agricultural machinery 5-6 hp capacity</b> Engine : 4 stroke single cylinder diesel engine 5 hp and 2 stoke 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. <b>1. Eddy Current Dynamometer (Water Cooled)</b> <ul style="list-style-type: none"> <li>• Rated absorption Power = 5 KW / 6.7 HP</li> <li>• Maximum torque = 15 Nm or More.</li> <li>• Maximum Torque at Speed = 2500 RPM</li> <li>• Maximum speed = 12000 RPM</li> <li>• Torque measurement precision = <math>\pm 0.25</math> FS%, 0.1 Nm resolution</li> <li>• Speed measurement precision = <math>\pm 0.5</math> FS %, 1RPM resolution</li> <li>• The direction of rotation both Clockwise &amp; Anti Clockwise.</li> <li>• Reaction type Torque Sensor to measure Torque, having 2 mV/V output.</li> <li>• 60 - Tooth wheel with magnetic pick up sensor to measure speed.</li> <li>• Torque calibrating arms and weights</li> <li>• Electro-less Nickel plating on water passages (groove side) of loss plates to ensure that corrosion does not detract from performance.</li> <li>• Magnetic heavy duty water strainer - filter.</li> <li>• Water Inlet Pressure Switch.</li> </ul> <b>2. Dynamometer Controller:</b> (Control Panel mounting stand on ground floor), Consisting of: <ul style="list-style-type: none"> <li>• Dynamometer Multi Mode Control Unit</li> <li>• Pot for variable loading of Engine.</li> </ul>

- 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

MODE Selection and RESET / START & STOP switch.

- 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:  $\pm 1$  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.

**3. Data Logging Facility:** PC Based, Data Acquisition & Control system.

**Consisting of:**

**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

Digital & Analogue inputs & outputs. Facility to View / Print observation table and save the acquired data .

- Software package for logging the engine test results.

**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 round type connectors with flexible conduit of length of 10Mtr.

**5. Suitable Engine Mounting Stand on Common Base Frame for Engine & Dyno.**

**6. Torsion Coupling:** Between Engine & Dynamometer with Guard.

**7. Volumetric Fuel Consumption unit along with Calibration Set Up:**

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.

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.

**3 years hardware and service warranty at SKUAST-J, Jammu**

**Installation:** Installation, Mounting & Erection, Wiring, Commissioning and necessary civil work etc. will be done by the supplier.

**INSTRUCTION MANUAL:**

Technical manual which describes the equipment and

		experimental procedure
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