

**Details of specifications of equipments to be purchased by FARMER under the project funded by DST vide sanction letter no. DST/SSTP/UP/285 (c) dated 14.06.2016**

**1. Specification for airlift fermenter 10 L ( 7L working volume)**

- Stainless still /Glass wall jacket fermenter vessel for growth of shear sensitive organisms ( L/D ratio around 3)
- Equipped with internal draught tube for airlift operation
- Propeller type impeller for mixing
- Top driven motor assembly
- Facility for pH, temperature and DO control
- In situ sterilization facility with in build steam supply
- computer controlled controller to monitor and control pH, temperature and dissolved oxygen
- Peristaltic pump for dosing ( 4 Number)
- Air compressor and chiller to take care of 10 l fermentation operation
- Steam sterilizable temperature, pH, and DO probe
- Three years guarantee for trouble free operation
- Any deviation in specification will be considered with the approval of technical committee.

**2. SPECIFICATIONS FOR A VERTICAL AUTOCLAVE**

- 175 liters capacity vertical double wall design autoclave for research use.
- Single stainless steel chamber type for water and steam.
- Pressure range 15 Psi; temperature range- 121-125 °C.
- Lid fitted pressure gauge, safety spring loaded pressure valve and steam release valve.
- Electric operated; 200-240 V/ 15A/ 50 Hz.
- Temperature and pressure controls with digital display.
- Auto cut off at cycle completion.
- Foot lifting arrangement for the autoclave lid.
- The 2 year warranty.
- Any deviation in specification will be considered with the approval of technical committee.

**3. SPECIFICATIONS FOR BENCHTOP PH METER WITH PROBES**

- Benchtop pH meter with probes, must meet GLP requirements

- pH range - -2.000 to 20.000
- Temperature range- -10 to 110°C, Temperature compensation automatic or manual
- Informative display with bright backlight
- High 0.001 pH resolution with  $\pm 0.002$  pH accuracy
- Temperature accuracy -  $\pm 0.5^\circ\text{C}$
- USA, NIST, DIN, Custom buffer recognition
- Store and recall up to 500 sets of data or send data to a PC or printer
- Visual stability indicator to inform when measurements have stabilized
- Should include electrode stand and 100/240 VAC power adapter, probes, electrode fill solution.
- CE compliant
- The 2 year warranty.
- Any deviation in specification will be considered with the approval of technical committee.

#### **4. SPECIFICATIONS FOR EC METER/TDS KIT**

- Easy to use automatic/ manual EC meter/TDS Kit with simple dip and read results
- Waterproof digital tester will float if dropped in water
- Up to three point calibration with auto-buffer recognition for quick calibrations. Easy pushbutton single point calibration—no screwdrivers required. Features self-adjusting TDS factor from 0.40 to 1.0.
- Single-junction pH electrode to protect against breakage.
- pH range 0 – 14.
- TDS range 0 – 1990
- Battery life should be > 200 hours.
- Rugged, chemical-resistant stainless steel sensor.
- Automatic temperature compensation to ensure accurate readings, a hold function to lock in a measured value, and auto shut-off to save battery life.
- Should include- tester; pH buffers 4, 7, and 10; conductivity solution 1500  $\mu\text{S}/\text{cm}$ ; electrode storage solution; and batteries.
- The 2 year warranty.
- Any deviation in specification will be considered with the approval of technical committee.

#### **5. SPECIFICATIONS FOR ANALYTICAL BALANCE**

- Analytical balance of capacity 220g.

- Pan Size 90 to 100 mm
- External calibration.
- High contrast LCD Display with large numbers & clear symbols to provide maximum readability regardless of lighting conditions
- Smart Operation- intuitive user interface through tactile mechanical buttons
- Quick access to all built-in applications & the adjustment menu.
- “ESC” functionality and exit button
- The 2 year warranty.
- Any deviation in specification will be considered with the approval of technical committee.

## **6. SPECIFICATIONS FOR A DESKTOP COMPUTER WITH PRINTER**

- A desktop computer with printer.
- Minimum 5th Generation Intel Core i5 processor
- Preloaded genuine Windows 10 operating system.
- 4 to 8 GB RAM+>1GB Graphics Card
- 1 TB Hard Disk Drive
- Preloaded genuine Microsoft Office 2013 or later version.
- The CPU must have
  - a) Power button,
  - b) 5-in-1 Multi-Card Reader
  - c) Audio combo jack
  - d) 2 USB 3.0 ports
  - e) Optical drive
  - f) Air vent
  - g) Line-in port
  - h) Line-out port
  - i) Microphone port
  - j) VGA port
  - k) HDMI port
  - l) USB 2.0 ports
  - m) Power-adapter port
  - n) Security-cable slot
  - o) Network port
  - p) Padlock rings
- 18 inch or larger TFT monitor with or without built in speakers.

- A multi -function colour Laser printer with scanning, photocopying and printing functions should be included in the quotation.
- The 2 year warranty.
- Any deviation in specification will be considered with the approval of technical committee.

## **7. SPECIFICATIONS OF UPRIGHT SOLID DOOR -200 C DEEP FREEZER**

- Capacity 300-400 lts
- CFC/HCFC free
- Temp range: -170 C to -240 C
- Dimension: Width 23.4” X Depth 23.4” X Height 72.8”
- Defrost: Manual
- Wheels should be present
- Lock should be present
- Number of baskets / shelves: 6 – 8
- Number of doors: Single or double
- Rated load – wattage: 140
- Suitable temperature display system for exhibiting inside temperature for monitoring
- Type of insulation: Puff with cyclopentene
- The 2 year warranty.
- Any deviation in specification will be considered with the approval of technical committee.