CSSD for 6 AIIMS

1. SCOPE OF WORK

This work is planned as a turnkey job, which includes supply, installation, testing and commissioning of the equipment, and all associated civil, mechanical, electrical, air conditioning and interior furnishing jobs.

The CSSD will be done turn-key basis. The bidders are required to visit the sites before submitting their bid.

2. REQUIREMENT OF MACHINERY

- Sterilizer 600 Litre or more , double door x 5 Nos
- Sterilizer 250 Litre, double door x 2 Nos
- Table Top Steriliser 20-25 Litre x 15 Nos
- Washer disinfector 300 to 350 Litre x 3 Nos
- Ultrasonic cleaner 40 Litre x 3 Nos
- Heat Sealing Machine x 4 Nos
- Ethylene Oxide Sterilizer 200 to 250 Litre x 2 Nos
- Reverse Osmosis plant 1500LPH x 1 No
- Documentation labeller x 1 No
- Inspection Lamps, furniture, carts, inspection tables, cleaning equipment, interior water treatment plant
- All necessary furniture required for the facility to be included.

3. TRAINING AND DOCUMENTATION

1. Bidder should provide two copies of complete set of part manual, service manual and user manual in English for each equipment supplied
2. Bidder should provide certificate of calibration and inspection of equipment from factory at the time of delivery of equipment.
3. Final system test, relevant safety test and calibrations should be carried out by authorized personnel with calibrated instrument with valid traceability.

4. CSSD Technicians of respective AIIMS have to be trained for a week for a period of six working days.
5. OEM or his authorized agent should post a trained Engineer who should be available at site or should reach the site within 24 hrs of raising a service call
6. Consumables for training and handover should be provided free of cost with the system.

4. TURNKEY JOB FOR CSSD UNIT

(Price of the Turnkey work should be quoted separately, i.e. Price of civil works, Air conditioning, Equipment, electrical works, etc)

The turnkey work includes all modifications to the built up space provided at the hospital site including Installation of Equipment, RO plant, civil works, electrical works, plumbing works, interior decoration, air conditioning, furniture and other related works of the CSSD unit required for the smooth and efficient functioning of the centre. These works shall comply with all relevant safety and standards guidelines. The vendor is fully responsible for installation and commissioning of all equipment. The work includes demolition of unwanted walls.

An indicative layout has been attached for reference purpose. However bidders are strongly advised to visit the site. Equipment loaded site drawing with actual dimension should be submitted along with the technical bid.

Turn Key Job to be provided by the Bidder

1. Bidders are required to visit the site for self-assessment of the extent of work.
2. Construction / re-construction, commissioning and installation to be strictly carried as per relevant local safety and building norms.
3. Bidder will be responsible for doing SS panelling for sterilizer and washer disinfector.
4. False ceiling modification in air conditioned area and sterile area.
5. All cable trenches and railings wherever required.
6. Modification of electrical: The consignee will terminate three phase supply line at an area in the CSSD. All other electrical cabling including control panel, switches, isolators etc inside the CSSD to be carried out by the bidder.
7. Installation and commissioning of all equipment.
8. Installation of RO water plant, exhaust for sterilizer has to be carried out by the bidder
9. ETO sterilizer should be provided with ventilation, degassing and other regulatory ethylene oxide disposal protection requirements.

Interior and Accessories for CSSD (Power/Drain/Lighting/AC/Exhaust)									
S. No	**Description**	**Flooring**	**Walls**	**Drains**	**Exhaust**	**Ventilation**	**Power /Isolator**	**Lighting & Fans**	**Remarks**
1	Soiled Reception	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to roof	-	-	-	5 A x 4	Fluorescent lighting +Fans	Counter has to be provided
2	Trolley Wash & Hold	Matt Tiles	Glazed tiles 2' x 2' up to roof	3" drains	-	-	-	Fluorescent Lights	
3	Wash & Disinfection Area	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to roof	3" drains	-	-	40 A x 3 15 A x 6 5 A x 5	Fluorescent lighting + fans	
4	Clean Store	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to false ceiling	-	-	Air conditioned	5 A x 2	Fluorescent Lights	
5	Office	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to false ceiling	-	-	Air conditioned	5 A x 3	Fluorescent lighting	
6	Change Room Female	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to roof	-	-	-	5 Ax 2	Fluorescent lighting +Fans	
7	Toilet	Matt tiles	Glazed tiles 2' x 2' up to roof	2" drain	-	-	-	Fluorescent Lighting	
8	Change Room Male	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to roof	-	-	-	5 Ax 2	Fluorescent lighting+Fans	
9	Toilet	Matt tiles	Glazed tiles 2' x 2' up to roof	2" drain	-	-	-	Fluorescent Lighting	
10	Staff Rest Room	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to roof	-	-	-	5 A x 2	Fluorescent lighting+Fans	
11	Control & Packing Area	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to false ceiling	-	-	Air-conditioning +ve	100A x 5 15 A x 6 5 A x	Fluorescent lighting	

							5		
12	Linen inspection, folding & Packing	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to roof	-		+ve Pressure ventilation	5 A x 2	Fluorescent lighting+Fans	
13	Gauze cutting Room	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to roof	-		+ve Pressure ventilation	15 A x 2	Fluorescent lighting+Fans	
14	ETO sterilizer room	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to false ceiling	2" drains	Gas Exhaust	-	30 A x 2	Fluorescent Lights 15 Amp sockets x 3	No mixing of air conditioning. Gas exhaust to be terminated at safe distance according to safety norms.
15	Sterile Store	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to false ceiling	-	-	Air conditioned	5 A x 2	Fluorescent Lights	-
16	Issue Counter	Vitrified tiles 2' x 2'	Glazed tiles 2' x 2' up to roof	-	-	-	5 A x 4	Fluorescent lighting+Fans	Counter has to be provided

I. CIVIL WORKS

Bidders are strongly advised to visit the site and carry out the assessment of works**.** Bidder has to carry out all civil modifications required at the site. All material should be of high quality and sample should be approved by consignee.

Bidder will be responsible for doing SS panelling for sterilizer and washer disinfector.

II. AIR- CONDITIONING

Air conditioning should be provided for areas such as clean store, sterile stores, packing area and officer room

1. Should provide split a/c or ductable package with wireless remote control for : sterile stores, packing area, clean store and office room.

2. The capacity of the a/c should be sufficient to maintain the required temperature and humidity.
3. Should be energy efficient and 5 star rating.
4. Bidder should carry out necessary ducting and false ceiling work required for A/C.

III. ELECTRICAL WORKS

Bidder should specify the details of the electrical work.

1. Consignee will provide Three phase power supply at one point in CSSD Area. All remaining work has to be done by the bidder; including distribution panel, individual equipment power panels, cabling and cable conduits.
2. Proper & Independent Earthing should be provided for each equipment.

IV. FIRE FIGHTING

Bidder should provide effective firefighting system. Bidder should provide two Dry CO2 cyliners-2 kg with essential accessories. Cylinders should be certified by respective regulatory board.

V. PLUMBING WORKS & DRAINING SYSTEM

All plumbing works associated with proper functioning of CSSD has to be carried out by the vendor. RO system required for the proper functioning of Sterilizers has to be provided by the bidder. Bidder will be responsible for supply and installation of water storage tanks and Booster pumps. Individual plumbing lines with valves are required.

VI. VENTILATION AND LIGHTING

Proper Ventilation system including fans and exhaust fans has to be provided for Cleaning and Disinfection area and linen folding area. Proper degassing and ventilation facilities should be provided for ETO sterilizer room. Proper ventilation has to be provided in the receiver area and entrance foyer. Bidder has to provide proper lighting for all the areas.

VII. STEAM PIPE LINES

All necessary work associated with the installation of sterilizer including integrated steam piping, pressure control valves and exhaust as required should be done by the vendor. All steam piping should be of SS 304.

VIII. DEMOLITION

Bidder have to undertake the demolition of any unwanted existing walls inside the existing CSSD area.

PREFERED MAKES FOR TURNKEY WORKS		
SL NO	**ITEMS**	**PREFERED MAKES**
A	**FLOORING**	
1	Vitrified Tiles	Somany, Kajaria, Johnson & Johnson
2	Paint	Dulux, Asian Paints
B	**PLUMBING**	Kohler, Jaguar
C	**SANITARY ITEMS**	CERA, Hind ware, Parry ware
D	**ELECTRICAL**	
1	Cables	Finolex, Havells
2	Switches	Legrand, Crabtree
3	Distribution Box, Breakers	Legrand, L&T, Seimens
4	Lighting	Philips, Wpro, Crompton Greaves
E	**AIR CONDINTIONING**	Bluestar, Voltas, Daikin

LIST OF EQUIPMENT & FURNITURE - CSSD	
ROOM NO:	**1**
Designation	**SOILED RECEPTION**
ITEM NO	**DESCRIPTION**
1	ISSUE/RECEIVE COUNTER
2	STAFF CHAIR
3	LAB STOOL WITHOUT BACK REST(SS)
4	WASTE BIN PEDAL OPERATED –SS
5	STORAGE CUPBOARD
6	COMPUTER
ROOM NO:	**2**
Designation	**TROLLEY HOLD & WASH**
ITEM NO	**DESCRIPTION**
1	MANUAL TROLLEY WASHER
ROOM NO:	**3**
Designation	**WASH & DISINFECTION AREA**
ITEM NO	**DESCRIPTION**
1	WASHER DISINFECTOR (300 to 350L)
2	WIRE STORAGE SHELF MODULE FOR DIRTY/DISINFECTION AREA

3	INSPECTION LAMP WITH MAGNIFIER
4	ULTRASONIC CLEANER (40L)
5	WASH STATIONS WITH 2 SINKS FOR DIRTY AREA
6	SPRAY GUN RINZER
7	VACUUM CLEANER
8	HAND DRYER
9	WORKTABLE FOR WET GOODS FOR DIRTY AREA
10	LAB STOOL WITHOUT BACK REST(SS)
11	WASTE BIN PEDAL OPERATED –SS
12	PASS BOX
13	TABLE TROLLEY FOR DIRTY/CLEAN/STERILE AREA
ROOM NO:	**4**
Designation	**CLEAN STORE**
ITEM NO	**DESCRIPTION**
1	WIRE STORAGE SHELF MODULE FOR CLEAN SUPPLY AREA
ROOM NO:	**5**
Designation	**OFFICE**
ITEM NO	**DESCRIPTION**
1	OFFICE TABLE
2	STAFF CHAIR
3	VISITOR'S CHAIR
4	STORAGE CUPBOARD
5	WASTE BIN PEDAL OPERATED –SS
6	COMPUTER
ROOM NO:	**6**
Designation	**STAFF CHANGE ROOM FEMALE**
ITEM NO	**DESCRIPTION**
1	CHANGE LOCKER - 4 COMPARTMENTS
2	WASTE BIN PEDAL OPERATED –SS
3	SHOE RACK
ROOM NO:	**7**
Designation	**STAFF CHANGE ROOM MALE**
ITEM NO	**DESCRIPTION**
1	CHANGE LOCKER - 4 COMPARTMENTS
2	WASTE BIN PEDAL OPERATED –SS
3	SHOE RACK
ROOM NO:	**8**
Designation	**STAFF REST ROOM**
ITEM NO	**DESCRIPTION**
1	OFFICE TABLE
2	VISITOR'S CHAIR
3	STORAGE CUPBOARD
4	WASTE BIN PEDAL OPERATED –SS
ROOM NO:	**9**

Designation	CONTROL & PACKING AREA
ITEM NO	**DESCRIPTION**
1	STEAM STERILIZER 600 LTR
2	CONTROL & PACKING TABLE WITH 2 SHELVES FOR CLEAN AREA
3	LAB STOOL WITHOUT BACK REST(SS)
4	HEAT SEALING MACHINE
5	WIRE STORAGE SHELF MODULE FOR CLEAN SUPPLY AREA
6	WASTE BIN PEDAL OPERATED –SS
7	INSPECTION LAMP WITH MAGNIFIER
8	DOCUMENTATION LABELLER
9	MULTI ROLL TAPE DISPENSER
10	INSTRUMENT TRAY SMALL
11	INSTRUMENT TRAY BIG
12	TABLE TROLLEY FOR DIRTY/CLEAN/STERILE AREA
13	PAPER DISPENSING TROLLEY
14	WORK TABLE FOR DRY GOODS FOR CLEAN AREA
15	DRYING CABINET
ROOM NO:	**10**
Designation	**LINEN INSPECTION,FOLDING & PACKING**
ITEM NO	**DESCRIPTION**
1	LINEN FOLD TABLE FOR CLEAN AREA
2	LAB STOOL WITHOUT BACK REST(SS)
3	OPEN STORAGE RACK
4	WASTE BIN PEDAL OPERATED –SS
5	LINEN DISTRIBUTION AND STORAGE TROLLEY
ROOM NO:	**11**
Designation	**GAUZE CUTTING ROOM**
1	GAUZE CUTTING MACHINE
2	WORK TABLE FOR DRY GOODS FOR CLEAN AREA
3	LAB STOOL WITHOUT BACK REST(SS)
ROOM NO:	**12**
Designation	**ETO ROOM**
ITEM NO	**DESCRIPTION**
1	ETO STERLIZER
2	WIRE STORAGE SHELF MODULE FOR STERILE STORE
3	WASTE BIN PEDAL OPERATED –SS
4	PASS BOX
ROOM NO:	**13**
Designation	**STERILE STORE**
ITEM NO	**DESCRIPTION**
1	WIRE STORAGE SHELF MODULE FOR STERILE STORE
2	WASTE BIN PEDAL OPERATED –SS
3	LAB STOOL WITHOUT BACK REST(SS)
4	CLOSED TRANSPORT TROLLEY FROM STERILE STORE TO OT

5	MODULAR STERLIZING BASKET-BIG
6	MODULAR STERLIZING BASKET-MEDIUM
7	CLOSED STERILIZATION CONTAINERS 300mm x 290mm x 110mm
8	CLOSED STERILIZATION CONTAINERS 300mm x 290mm x 140mm
9	CLOSED STERILIZATION CONTAINERS 590mm x 280mm x 260mm
10	FREE STANDING BASKET RACK
11	BASKET TROLLEY
12	TABLE TROLLEY FOR DIRTY/CLEAN/STERILE AREA
13	WORK TABLE FOR DRY GOODS FOR STERILE AREA
ROOM NO:	**14**
Designation	**ISSUE COUNTER**
ITEM NO	DESCRIPTION
1	ISSUE /RECEIVE COUNTER
2	STAFF CHAIR
3	WASTE BIN PEDAL OPERATED –SS
4	PASS BOX
5	COMPUTER
OTHER EQUIPMENTS	
1	RO PLANT
FOR TSSU	
1	STERILIZER 250 L
2	TABLE TOP STERILIZER WITH ACCESSORIES 25L

SPECIFICATIONS

I. CSSD EQUIPMENT

1. Horizontal Sterilizer 600 L or more. With Accessories

Fully automatic Microprocessor controlled Horizontal Autoclave (Steam Sterilizer), with pre and post-vacuum treatment and with loading equipment.

(a) Door: The sterilizer supplied should be pneumatically (Compressed Air) /electrical operated double door with fully automatic vertical sliding movement along with door safety features.

Door Safety Systems:

1. Pressure sensor system should be available in the chamber to monitor the chamber pressure. Chamber should be completely depressurized before the door seal is retracted by vacuum.
2. Door chamber should not be opened when chamber is pressurized.
3. A mechanical safety edge stops the door if it is obstructed while closing, thus protecting operator & loading equipment.
4. A cycle should not start if the door is open or not properly locked.
5. The door seal should be made of silicon rubber gasket & on commencement of the process the door gasket is pressed against the rear face of the door by steam/air to ensure the door remains closed during the process.
6. Double door safety is implemented through interlocks which prevent both doors from being opened simultaneously.

(b) Construction:

1. Chamber & Doors: The chamber and doors should be made of solid, high quality 316L Stainless steel. The chamber should be jacketed to ensure the temperature uniformity in chamber. The chamber floor is slightly sloped towards an internal drain to facilitate drainage. A stainless steel mesh strainer should be provided to protect the

drain port from blockage by debris. The chamber is mounted on a stainless steel framework with height adjustable feet.

2. Surface Treatment: The internal surface should be electro-chemically treated for high quality smooth finish to facilitate cleaning. The resultant surface should be polished to less than 0.8 μm fineness to protect against corrosion. The internal corners should be rounded off to facilitate efficient cleaning.
3. Insulation: The sterilizer jacket and door should be completely insulated to keep the autoclave cool on the outside. The insulation should be completely encased in rigid removable sheet housing.
4. Jacket: The jacket should be made of 316L quality stainless steel with pressure gauge.
5. Steam Generator: The sterilizer should have inbuilt/stand-alone steam generator of adequate capacity. In inbuilt steam generator, it should be mounted under the sterilizer chamber & should be made of 316 quality stainless steel. The steam generator should have insulation with SS housing. It should have a built in thermostat, pressure safety valve & water level glass gauge inspection device visible from service area. The heating element should be of sufficient capacity to make the sterilization process faster with maximum cycle time of 45-50mins in pre vacuum. It should also have the automatic blow down valve & degassing system for feeding water to steam generator.

(c) Pipes, Valves and Components:

1. The piping system should be made of S.S. 316 quality. All the process valves should be stainless steel & should be pneumatically operated piston valves for longer trouble free operations. All the non-standard components should be non-proprietary & should be easily sourced. All the hot pipes should be properly insulated. Only the safety valves should be made of brass.
2. Primary piping & fittings should be stainless steel threaded or stainless steel triclamp fittings.
3. Primary components: 316 quality triclamps or threaded fitting components like – Manual valve, non-return valve, pressure regulator, pneumatic valves, and steam trap etc.
4. Electrical Components: the terminals & contacts should be housed in a water tight cabinet while the other electrical component should be directly mounted on sterilizer.

(d) Air Filter: A disposable air filter should be provided for filtering the atmospheric air before entering inside the chamber. The filter separation efficiency should be higher than 99.998% for particle size less than 0.3µm.

(e) Control System:

1. The control system should be microprocessor based PLC system specially designed for sterilization application. Control system should have touch sensitive, 7-9" colour display interface at operator loading side while it should have normal interface at unloading side. Apart from main PLC based control system the sterilizer should also have additional independent monitoring & documentation system which constantly cross checks the safety systems & time.
2. Multiple password access levels (specify number) should be provided to control access/operation of the machine preventing unauthorized access. These access levels should be user selectable. The control system should have CPU processor with battery back-up & nonvolatile memories, Digital input/output controls, analog measuring inputs & COM ports for printer & PC connectivity.
3. With the standard factory configuration, calibration of the temperature circuits and calibration of the pressure circuits require a access code.

(f) Temperature and Pressure Sensors:

1. The sterilizer should have at least 2 temperature sensors one at chamber drain & one in Jacket. It should also have 1 pressure sensor in chamber.
2. The sensors should be PT100 sensors to confirm Class A of the IEC 571 standard, with accuracy of ± 0.1˚C while the pressure sensor should have the accuracy 1% over the range of 0-5 bar.
3. Each sensor circuit should be calibrated with individual constants to correct the deviation in manufacturing and aging.

(g) Alarms:

Automatic process checking & failure correction should be possible by the control system. The range of alarm should include over temperature , pressure sensor failure, phase time-out, doors not properly closed, power failure (less than 10 sec should be ignored), Continuous

self-checking of all the safety devices, low water level ,water in chamber etc should be possible. All the alarms should be audio and visual.

(h) Loading/Unloading system:

Sterilizer should have the two rails for easy loading, shelf rack with shelves (carriage) with 1 set of loading and unloading trolley.

(i) Cycle Documentation – Printer:

The autoclave should be equipped with an alpha-numeric Laser printer which prints the each cycle parameter performed by the sterilizer. The measured values of temperature and pressure are printed at fixed time intervals, according to various phases of the sterilization process such as 4 minute time interval for vacuum, 1 minute time interval for sterilization, and the start and end time of the drying phase. All these time intervals should be user defined. Vendor should supply customized time intervals as desired by the user prior to order delivery.

(j) Water Consumption:

Specify water consumption levels.

(k) Vacuum Pump:

High vacuum compressor (water ring type) with recycling facility for removal of air within the chamber should be provided & mounted on vibration isolator for quite operations. . It should also have low water level alarm to protect it from dry run.

(l) Available Cycles:

The sterilizer should be designed to operate various programs. Apart from standard cycles, special cycle should be programmed by an authorized supervisor code only.

(m) Programs include:

1. Wrapped Instruments, Porous load $134^{0}C$
2. Heat Sensitive material, rubber, plastic, porous load $121^{0}C$
3. Rapid cycle for single open instrument
4. Heavy load cycle
5. Bowie & Dick test (7 Kg), PCD test

6. Leak test

(n) Directives & Standards:

It should meet EN ISO / IEC directives and product should be European CE/ US FDA Standards. Copy of certificate is to be attached.

The manufacturer should have ISO 13485:2003 or EN 285 for Large Autoclaves (Europe) or USA: ST8 – Hospital Sterilizers

(o) Should pass a hollow load (A) test (Batch monitoring system).

(p)Steam Sterilizer should have provision for connecting a ¾" line terminating in the shutoff valve, nonreturn valve, pressure relief valve, steam riser, condensate drain and other essential accessories (for future steam connection from the central boiler).

(q)In case of suppliers offering standalone steam generator they should provide alternatives for ensuring clean steam (as per International Standards).

i. With standalone generator

ii. For preheating the sterilizer with steam from a central boiler having adequate stand by supply

2. Sterilizer 250 L with Accessories

Fully automatic Microprocessor controlled Autoclave (Steam Sterilizer), floor mounted with pre and post-vacuum treatment and with loading equipment.

(a) Door: The sterilizer supplied should be supplied with manual swing door with door safety features.

Door Safety Systems:

1. Pressure sensor system should be available in the chamber to monitor the chamber pressure. Chamber should be completely depressurized before the door seal is retracted by vacuum.
2. Door chamber should not be opened when chamber is pressurized.
3. A mechanical safety edge stops the door if it is obstructed while closing, thus protecting operator & loading equipment.
4. A cycle should not start if the door is open or not properly locked.

5. The door seal should be made of silicon rubber gasket & on commencement of the process the door gasket is pressed against the rear force of the door by steam/air to ensure the door remains closed during the process.

(b) Construction:

1. Chamber & Doors: The chamber and doors should be made of solid, high quality 316L Stainless steel. The chamber should be jacketed to ensure the temperature uniformity in chamber. The chamber floor is slightly sloped towards an internal drain to facilitate drainage. A stainless steel mesh strainer should be provided to protect the drain port from blockage by debris. The chamber is mounted on a stainless steel framework with height adjustable feet.
2. Surface Treatment: The internal surface should be electro-chemically treated for high quality smooth finish to facilitate cleaning. The resultant surface should be polished to less than 0.8 µm fineness to protect against corrosion. The internal corners should be rounded off to facilitate efficient cleaning.
3. Insulation: The sterilizer jacket and door should be completely insulated to keep the autoclave cool on the outside. The insulation should be completely encased in a rigid removable sheet housing.
4. Jacket: The jacket should be made of 316L quality stainless steel with pressure gauge.
5. Steam Generator: The sterilizer should have inbuilt/standalone steam generator of adequate capacity. In inbuilt model, it should be mounted under the sterilizer chamber & should be made of 316 quality stainless steel. The steam generator should have insulation with SS housing. It should have a built in thermostat, pressure safety valve & water level glass gauge inspection device visible from service area. The heating element should be of sufficient capacity to make the sterilization process faster with maximum cycle time of 45-50mins in pre vacuum. It should also have the automatic blow down valve & degassing system for feeding water to steam generator.

(c) Pipes, Valves and Components:

1. The piping system should be made of S.S. 316 quality. All the process valves should be stainless steel & should be pneumatically operated piston valves for longer trouble free operations. All the non-standard components should be non-proprietary & should be easily sourced. All the hot pipes should be properly insulated. Only the safety valves should be made of brass.

2. Primary piping & fittings should be stainless steel threaded or stainless steel triclamp fittings.
3. Primary components: 316 quality triclamps or threaded fitting components like - Manual valve, non-return valve, pressure regulator, pneumatic valves, and steam trap etc.
4. Electrical Components: the terminals & contacts should be housed in a water tight cabinet while the other electrical component should be directly mounted on sterilizer.

(d) Air Filter: A disposable air filter should be provided for filtering the atmospheric air before entering inside the chamber. The filter separation efficiency should be higher than 99.998% for particle size less than 0.3μm.

(e) Control System:

1. The control system should be microprocessor based PLC system specially designed for sterilization application. Control system should have touch sensitive, 7-9'colour display interface at operator loading side while it should have normal interface at unloading side. Apart from main PLC based control system the sterilizer should also have additional independent monitoring & documentation system which constantly cross checks the safety systems & time.
2. Multiple password access levels (specify number) should be provided to control access/operation of the machine preventing unauthorized access. These access levels should be user selectable. The control system should have CPU processor with battery back-up & non-volatile memories, Digital input/output controls, analog measuring inputs & COM ports for printer & PC connectivity.
3. With the standard factory configuration, calibration of the temperature circuits and calibration of the pressure circuits require a access code.

(f) Temperature and Pressure Sensors:

1. The sterilizer should have at least 2 temperature sensors one at chamber drain & one in Jacket. It should also have 1 pressure sensor in chamber.
2. The sensors should be PT100 sensors to confirm Class A of the IEC 571 standard, with accuracy of ± 0.1deg C while the pressure sensor should have the accuracy 1% over the range of 0-5 bar.
3. Each sensor circuit should be calibrated with individual constants to correct the deviation in manufacturing and aging.

(g) Alarms:

Automatic process checking & failure correction should be possible by the control system. The range of alarm should include over temperature , pressure sensor failure, phase time-out, doors not properly closed, power failure (less than 10 sec should be ignored), Continuous self-checking of all the safety devices, low water level ,water in chamber etc should be possible. All the alarms should be audio and visual.

(h) Loading/Unloading system:

Sterilizer should have the two rails for easy loading, shelf rack with shelves (carriage) with 1 trolley.

(i) Cycle Documentation - Printer:

The autoclave should be equipped with an alpha-numeric laser printer which prints the each cycle parameter performed by the sterilizer. The measured values of temperature and pressure are printed at fixed time intervals, according to various phases of the sterilization process such as 4 minute time interval for vacuum, 1 minute time interval for sterilization, and the start and end time of the drying phase. All these time intervals should be user defined. Vendor should supply customized time intervals as desired by the user prior to order delivery.

(j) Water Consumption:

Specify water consumption levels.

(k) Vacuum Pump:

High vacuum compressor (water ring type) with recycling facility for removal of air within the chamber should be provided & mounted on vibration isolator for quite operations. It should also have low water level alarm to protect it from dry run.

(l) Available Cycles:

The sterilizer should be designed to operate various programs. Apart from standard cycles, special cycle should be programmed by an authorized supervisor code only.

(m) Programs include:

1. Wrapped Instruments, Porous load 134deg C
2. Heat Sensitive material, rubber, plastic, porous load 121deg C
3. Rapid cycle for single open instrument

4. Heavy load cycle
5. Bowie & Dick test (7 Kg), PCD test
6. Leak test

(n) Directives & Standards:

1. It should meet EN ISO / IEC directives and product should be European CE/ US FDA Standards. Copy of certificate is to be attached
2. The manufacturer should have ISO 13485:2003 or EN 285 for Large Autoclave Should pass a hollow load (A) test (Batch monitoring system).

3. Table Top Sterilizer with Accessories

1. Sterilizer Type: Table Top Sterilizer
2. Capacity: 20-25 L
3. Chamber Size: The sterilizer should have Circular or Rectangular chamber .
4. Quality System Compliance: Sterilizer should comply the quality systems as per ISO 9001:2000/ EN ISO 13485:2003/ ISO 14001:2004.
5. Quality Standards: Sterilizer should be US FDA/ European CE certified
6. Types of Cycles Process: Table Top Sterilizers should be equipped with B-process, N process as per latest EN 13060. Proof of declaration of conformity is to be enclosed.
7. Chamber:
    - Should be made of S.S.316 & should comply the Pressure Equipment Directive (PED) &EN 13445 norms.
    - Chamber should have working pressure 2.2 bar & design pressure upto 3.8 bar.
    - Chamber should be equipped with electrically heated jacket for preheating on standby mode.
8. Door Design: Should have radially opening door with at least two locking bolts for enhanced door safety. The doors should come with silicon elastomeric rubber gasket to withstand temperature up to 140°C & 20-30 psi.
9. Air Filter: A disposable air filter should be provided for filtering the atmospheric air before entering inside the chamber. The filter separation efficiency should be higher than 99.998% for particle size less than 0.3μm.

10. Cycle programs:
    - 134°C Wrapped.
    - 121°C Wrapped.
    - 134°C Flash/Rapid open instrument cycle.
    - 134°C Textile.
    - Test programs : Bowie & Dick, Leak Test.
11. Water Storage Tank: Sterilizer should have inbuilt water reservoir with storage capacity up to 5 L. The water reservoirs should have easy access for cleaning & to avoid bio film.
12. Steam Generator: Sterilizer should have inbuilt steam generator .The steam generator design should be with integrated energy storing system for building up power for sterilization loads in short time.
13. Control Panel: The control system should be microprocessor based PLC system specially designed for sterilization applications. The control system should have CPU processor with battery back-up, Digital input/output controls, analog measuring inputs & COM ports for printer & PC connectivity.
14. Alarms: Automatic process checking & failure correction should be possible by the control system. The range of alarm should include Temperature & pressure sensor failure, phase time-out, doors not properly closed, power failure (less than 10 sec should be ignored), continuous self-checking of all the safety devices, low water level etc. All the alarms should be audio-visual.
15. Accessories: The sterilizer unit should include rack with 5 levels & suitable size instrument trays should be the part of the supply for every sterilizer. The Sterilizer should have water circulation system so that no drain point & fixed water inlets required.
16. Electrical Requirement: 230V & 50 Hz electric supply.

4. Washer disinfector with accessories

1. The washer disinfector shall be suitable for cleaning and disinfection of surgical instruments/goods. The process shall include pre wash, detergent wash and hot water disinfection, rinse and drying cycles.

2. The unit shall be suitable for electrical operation and would be complete with water circulation pump, necessary valves & fittings.
3. It should be microprocessor based so as to ensure correct program sequence and irregularities or deviations which are displayed immediately.
4. Chamber Capacity: Operational Volume should be 300 to 350 L. Should supply 12 Nos of standard DIN trays. The chamber should be made of S.S. 316L quality with electro polished washed surfaces. The chamber edges should not have the pockets & folds so as to avoid bacterial growth. The wash chamber should also be fitted with bright light for clear visibility of the washing process. Chamber dimension should suit the capacity.
5. Washer should have following features:

a) For shortest possible filling and draining phases, higher capacity quick opening valves should be used so that short total process time is achieved. The design should focus on saving the environment through reduced consumptions of all utilities.
b) Cleansable spray arms should be located at the top and bottom of the chamber.
c) Wash carts should be equipped with cleansable spray arms between each shelf so as to facilitate water to reach all the surfaces which needs to be cleaned.
d) Injection wash carts should be automatically connected to water and drying air in order to clean and dry the inside of the tubular instrument.
e) The drying air should be pre-heated.
f) The washer should be equipped with independent temperature monitoring and validation test port.
g) Data interface RS232 should be available.
h) All electrical components should be easily accessible for easy service - ergonomic design.
i) Washer should have a built in self-cleaning debris filter
j) Washer should be equipped with audible alarm that alerts if error code occurs.
k) Double door should be made of toughened glass for see through & should facilitate the loading process.
l) The washer should have 3 dosing pump (detergent, alkaline & lubrication) for process chemicals, instrument lubricants/ enzymatic cleaners

6. The washer should perform:

a) Pre-rinses with cold water.

b) Main washes with hot water (60C) and detergent.
c) Final rinse with water (55C)
d) Disinfection with hot water (85C)

7. Unit to have LCD display and operating console to have membrane key pad for durability.
8. Unit should feature safety measures such as:

a) Automatic door lock.
b) Automatic temperature regulation.
c) Electronic adjustment of water level.

9. The unit should also have an interface as standard for an optional batch printer.
10. The washer disinfector shall be supplied with universal rack, 4 level racks for instrument tray, full size instrument tray as well as stop valves, anti-suction device and plastic water trap.
11. Should ensure essential washing accessories.
12. Standards & Norms:

    Should be FDA/ European CE certified.

    Manufacturer should be ISO 13485:2003/ EN ISO15883/ISO9001

5. Reverse Osmosis Plant 1500 LPH

1. Reverse Osmosis Plant 1500 Liters per hour capacity
2. Should have stainless steel skid mounts for pre-treatments and RO unit
3. Should have booster Pumps.
4. Should have direct bypass valve and auto flush systems.
5. Should have thin film composite membrane of equivalent.
6. Should have dry run protection of pump.
7. Should have auto flush timer.
8. Should have automatic tank level control.
9. Should have over voltage and over current protection.
10. Should have high efficiency reverse osmosis membrane.
11. Should have 6000 L purified water reservoir with bacterial vent filter to ensure microbiological integrity.
12. Should have re-circulation pump provides instantaneous delivery flow.

13. Should have comprehensive micro-processor monitoring and control system.
14. Should be FDA/ European CE certified.

6. Ethylene Oxide Sterilizer

1. The ETO gas sterilizer should be fully automatic type for sterilization of heat sensitive goods such as anesthetic tubing and other plastic disposable materials etc.
2. The sterilization chamber should be double walled, corrosion and gas resistant of suitable alloy.
3. The inner surface should be smoothly finished to minimize gas deposits.
4. The chamber shall be insulated against heat emission and jacket shall be connected to warm water circulation arrangement.
5. The sterilizer door shall have a quick release locking arrangement, with door opening to the sides.
6. Suitable safety interlocking arrangement shall be provided for the door so that the sterilization process does not start unless the door is properly locked in position and during the programme run it should not open.
7. The sterilizer shall be provided with suitable vacuum pump and gas trap to separate and evacuate the gas.
8. The ETO sterilizer should be able to operate for the minimum essential following cycles programmes :

a) Sterilization cycle for heat sensitive objects that ensure temperature from 33-55degreeC with subsequent aeration for protection of the operating personnel.
b) Aeration cycle/programme to extract residual gas out of the sterilized objects after each sterilization cycle.
c) Automatic chamber evacuation cycle with subsequent venting before releasing the door lock for opening, thereby prohibiting exposure of the operating personnel by gas dissolving from the chamber walls during shutdown period.
d) Gas disposal arrangement/catalytic converter.

9. Capacity: Should have capacity of 200-250 L
10. The ETO sterilizer shall be equipped with the following accessories:

a) Sterilization basket of suitable size : 1 No.
b) EO gas cartridges: 25 No.
c) Packaging material with chemical indicator of all sizes, 1 roll each.

11. Gas cartridges should be EPA certified.
12. Technical Data

a) Sterilization Gas : Ethylene Oxide
b) Sterilization method : Cold sterilization of heat sensitive material
c) Operating temp. Range : 33 to 55 C
d) No. of doors : One

Should be FDA/ European CE certified.

7. Heat Sealing Machine

1. Rotary heat sealers should provide validated sealing of sterilization bags and clear-view pouches (paper/plastic laminate).
2. It should be microprocessor-controlled.
3. The rotary heat sealer should give documentation of process parameters via an integrated printer and could be integrated with documentation system.
4. The ergonomically design should be tilted forward for increased user convenience and space saving installation.
5. The sealer housing should be powder-coated and the control panel is of the flat-membrane type, for easy cleaning.
6. It should be operationally simple. When a bag is fed into one side of the machine, the machine should start automatically or by pushing a button, moving the bag through the machine, and applying pressure and heat to form a perfect seal.
7. The warm-up time should not exceed 30 seconds, and the feed speed should be approx. 10 m/min.
8. The temperature should be adjustable from 50–200°C with a tolerance of 1% of the set value.
9. It should be regulated by a heating element that is highly sensitive to temperature fluctuations, assuring even temperature and perfect seals.
10. It should offer a number of additional features, including:

a) Automatic start-up
b) Reverse feed function in case an instrument accidentally enters the sealing area
c) Energy-saving stand-by mode
d) Pre-set temperatures

e) Re-settable counter function

11. Rotary heat sealers come with a port and cable for connection of the sealer to a PC and printer, enabling monitoring and documentation of the entire process.
12. Should have a protection mechanism against overheating and start prevention at temperature deviations outside +/- 5° C tolerance.
13. Rotary heat sealer should be European CE / US FDA certified.

8. <u>Spray Gun Rinser</u>

1. Spray gun rinse unit should be designed for connection to water or compressed air, to use for assisted cleaning of pipettes, catheters, cannulas, syringes etc.
2. The spray-gun should include tubing and different tips and nozzles for the various cleaning purposes, like

a) Syringes and cannulas with Record cone
b) Measuring and blood pipettes
c) Catheters and small pipes
d) Drainage tubing
e) Syringes and cannulas with Lure cone
f) Spray jet for rapid instrument cleaning
g) Bottles and Erlenmeyer flasks
h) Water jet pumps for suction cleaning
i) All appliances are stored within easy reach on a special wall-mounted rack (included).

3. A special wall-mounted rack should be a part of standard supply to store all appliances within easy reach.
4. All tips should be able to get easily locked to the spray gun by a safety cone.
5. The gun grip is heat-insulated. The water/air pressure is released, regulated and fully controlled by the spray-gun trigger (adapted to a 1/2" connection).
6. Bidder should provide complete details of sets of standard and optional adapters, nozzles and accessories.

9. <u>Multi-Roll Tape Dispenser</u>

1. Size (LxWxH) 2600x600x1200mm

2. This dispenser for sterilizer tape should hold two reels of tape.
3. The heavy-duty bottom plate should be fitted with anti-slip rubber to prevent the dispenser from slipping when tape is torn off.
4. Should be made of high quality coated steel for long use.

10. <u>Ultrasonic Cleaner (40 L)</u>

1. The units should be a compact free-standing bench model, with a built-in tank manufactured from high-quality (316) stainless steel and a solid-state generator that sends ultrasonic (approx 40 KHz) impulses through wash water containing detergent and electrical heating; microprocessor controlled display with memory time and temperature functions.
2. The electrical energy should be transformed into sound waves by transducers, fixed to the bottom of the tank.
3. The tank should be made of solid stainless steel (316).
4. The ultrasonic cleaner should have a display and control which could be easily seen and placed above any liquid for safety and reliability.
5. It should have digital read out timer and temperature setting (temperature adjustable from 20 to 69 °C) monitoring.
6. Capacity should be 40 L
7. Should work on 230V, 50 Hz AC Supply.
8. Ultrasonic cleaner should be European CE/ US FDA certified.
9. Ultrasonic cleaner should supplied with Wire mesh basket of suitable size & Stainless steel lid

11. <u>Manual Trolley Washer</u>

1. Trolley washer should be wall mounted spray gun unit with holder for detergent.
2. Should have connection to hot water with ½" tubing or reinforced rubber hose.
3. Should work on normal water pressure
4. Cleaning agent should be automatically injected into the water flow.

12. Inspection Lamp with Magnifier

1. Should have two spring balanced arms with parallel movement of at least 150 degree in horizontal plane.
2. Magnifying lens should be of fixed 7 diopter bi-convex.
3. Lens diameter should be approximately 12.5 cm

13. Vacuum Cleaner

1. Should be upright vacuum cleaner
2. Should have vacuum and blowing functions
3. Should have 30 liter tank, rust-resistant
4. Should have 60 liters per second air flow, 17 kilopascals suction power
5. Should work on 230V, 50 Hz AC Supply.

14. Hand Dryer

1. Should be wall mount type
2. Should have infrared sensor for automatic detection of hands
3. Should have brushed 304 SS finish.
4. Motor should be at least 1/10 HP at 7500 RPM
5. Dryer should deliver the flow of 7300 LFM.
6. Should work on 230V, 50 Hz power supply
7. Should supply with all accessories such as clamps for mounting

15. Documentation Labeller

The labeller should be 3–line for printing the following information

a) Person responsible for sterilization
b) Load number
c) Packaging content
d) Sterilizer number
e) Production date

f) Expiry date

Should have 24 rolls of 750 3-line labels with double adhesives (Steam and ETO) indicator

16. Gauze Cutting Machine

1. Should be useful in cutting thickest of cotton gauze material
2. Should consist of a cutting unit and a knife sharpening unit
3. Blade size should be 200 mm.
4. Cutting Capacity should be 165 mm.
5. Should work on 230V, 50 Hz power supply.

17. Drying Cabinet

1. Should be automatic in operation
2. Inner chamber should be made up of stainless steel and outer chamber should be of epoxy painted CRCA sheets
3. Should have heaters of minimum 2 KW
4. There should be provision for setting the drying temperature and drying time.
5. Approximate Dimension: 600X600X 600 mm

18. Should be provided with compressor if required.

II.CSSD FURNITURE ITEMS:

1. Wash Stations with 2 sinks for dirty area

1. Size Approx. (L x W x H) : 2000x750x850 mm
2. The worktop should be made of solid, bright-polished minimum sheet thickness of 1.5 mm stainless steel (304) to withstand heavy-duty work with wet instrument.
3. Designed with an integrated 10 mm high edge at the front and sides, and a 60 mm high edge (splash back) at the rear
4. The front and side edges are reinforced and widened to 49 mm. Edges are welded together and polished at the corners.
5. The worktop should slope to the sink, and reinforced by a full-length support frame.

6. The support frame should be a complete assembly with the front, back and ends welded together at the corners.
7. The worktop and support frame should be bonded together with double-adhesive tape of a special, age-resistant quality to give rigidity and noise abatement.
8. The floor stand should be made of polished stainless steel.
9. The table should be available with double sink units preferably at both ends of the table, all with a smooth, polished inside finish made of stainless steel (304) top
10. Corners should be curved to a 65 mm radius for easy cleaning.
11. The bottom should slope to the drain.
12. Sink units should be of sizes that allow processing of the large modular instrument trays
13. Sink units should have 650 mm wide and 900 mm high (adjustable ± 25 mm).
14. The legs should be able to provide strong support and hold to the entire unit securely.
15. The sink should include a drain valve, removable strainer, manually operated drain-valve, overflow drainpipe and water trap. The table also includes a mixing faucet with swivel spout, for cold and hot water connection.
16. Should be delivered ready for assembly.

2. <u>Work Table for Wet Goods for dirty area</u>

1. Size approx. (L x W x H) : 1800x650x900 mm
2. Stainless steel tables specially designed for inspection and sorting of wet goods in heavy-duty areas and for general purpose pre-storage.
3. The work tables should have a rigid stainless steel construction which is easy to clean and should not have sharp edges or corners.
4. The table should be ergonomically worked up, should have easy to clean robust matt-finished (to reduce reflection of light from the surface) with minimum sheet thickness of 1.5 mm stainless steel (304) worktop/surface to withstand and carry out heavy work comfortably, either sitting or standing.
5. The edges along the front, back and sides should be reinforced and widened to 37 mm, giving a rigid construction.
6. They are welded together and polished at all corners for good hygiene, as well as for the comfort and safety of the staff.

7. The worktop should be supported by a complete assembly with full-length reinforcements along the front, back and ends, welded together at the corners.
8. The worktop and support frame are bonded together with double-adhesive tape of a special, age-resistant quality to give rigidity and noise abatement.
9. The support frame has to be mounted on a solid, stable floor stand, made of polished stainless steel square tubing, with horizontal braces 300 mm above floor level. An adjustable 10cm (± 25 mm) plastic foot, easy to clean, is mounted on each leg.
10. The provision is to be made for a sturdy 445 mm-wide stainless steel shelf (optional) can be mounted on the horizontal braces.
11. It should be delivered ready for assembly.
12. All edges should be smooth and the rigid frame should be made up of minimum 1.5 mm sheet thickness stainless steel (304).
13. There should be unobstructed access to the working space, since the only supports needed along the front of the table are the corner legs. This also facilitates cleaning of floors.

3. <u>Work Table for dry Goods for clean area</u>

(Pass Box Receiving)

1. Size approx. (LxWxH):1800x650x900 mm approximately.
2. Stainless steel tables specially designed for working with dry goods and for general purpose pre-storage.
3. The work tables should have a rigid stainless steel construction which is easy to clean and without sharp edges or corners.
4. The table should be ergonomically worked up, should have easy to clean robust matt-finished (to reduce reflection of light from the surface) with minimum sheet thickness of 1.5 mm stainless steel (304) worktop/surface to withstand and carry out heavy work comfortably, either sitting or standing.
5. The edges along the front, back and sides should be reinforced and widened to 37 mm, giving a rigid construction.
6. They are welded together and polished at all corners for good hygiene, as well as for the comfort and safety of the staff.
7. The worktop should be supported by a complete assembly with full-length reinforcements along the front, back and ends, welded together at the corners.

8. The worktop and support frame are bonded together with double-adhesive tape of a special, age-resistant quality to give rigidity and noise abatement.
9. The support frame has to be mounted on a solid, stable floor stand, made of polished stainless steel square tubing, with horizontal braces 300 mm above floor level. An adjustable10 cm (± 25 mm) plastic foot, easy to clean, is mounted on each leg
10. The provision is to be made for a sturdy 445 mm-wide stainless steel shelf (optional) can be mounted on the horizontal braces.
11. Must be delivered ready for assembly
12. All edges should be smooth and the rigid frame should be made up of minimum 1.5 mm sheet thickness stainless steel (304).
13. There should be unobstructed access to the working space, since the only supports needed along the front of the table are the corner legs. This also facilitates cleaning of floors.

4. <u>Work Table for dry Goods for sterile area</u>

1. Size (LxWxH) :1800x650x900 mm approximately.
2. Stainless steel tables specially designed for working with dry goods and for general purpose pre-storage.
3. The work tables should have a rigid stainless steel construction which is easy to clean and without sharp edges or corners.
4. The table should be ergonomically worked up, should have easy to clean robust matt-finished (to reduce reflection of light from the surface) with minimum sheet thickness of 1.5 mm stainless steel (304) worktop/surface to withstand and carry out heavy work comfortably, either sitting or standing.
5. The edges along the front, back and sides should be reinforced and widened to 37 mm, giving a rigid construction.
6. They are welded together and polished at all corners for good hygiene, as well as for the comfort and safety of the staff.
7. The worktop should be supported by a complete assembly with full-length reinforcements along the front, back and ends, welded together at the corners.
8. The worktop and support frame are bonded together with double-adhesive tape of a special, age-resistant quality to give rigidity and noise abatement.

9. The support frame has to be mounted on a solid, stable floor stand, made of polished stainless steel square tubing, with horizontal braces 300 mm above floor level. An adjustable10 cm (± 25 mm) plastic foot, easy to clean, is mounted on each leg.
10. The provision is to be made for a sturdy 445 mm-wide stainless steel shelf (optional) can be mounted on the horizontal braces.
11. Must be delivered ready for assembly
12. All edges should be smooth and the rigid frame should be made up of minimum 1.5 mm sheet thickness stainless steel (304).
13. There should be unobstructed access to the working space, since the only supports needed along the front of the table are the corner legs. This also facilitates cleaning of floors.

5. Control & Packing Table with two Shelves for clean area

1. Size (LxWxH) : 2000x1500x900 mm approximately.
2. This table should be specially designed for sorting, inspection, functional control and packing of various sets for wards, clinics etc. and for surgical instrument sets in trays. The work could be done comfortably, either sitting or standing.
3. The worktop should be made of a robust wood-based core material, surfaced with plastic laminate in a soft beige colour that reduces reflection of light from the surface. All edges should be smooth. The extended width of the worktop should be designed to facilitate thorough inspection of instrument trays and allow the use of large wrapping material.
4. The rigid frame is made of stainless steel (304).
5. There should be unobstructed access to the working space, since the only supports needed along the front of the table are the corner legs. This also facilitates cleaning of floors.
6. Should have double workspace. One workplace table should have 700 mm wide worktop and other workplace should have 1400 mm worktop.
7. The table should include a two-shelf console, mounted on the worktop, for storage of packaging materials. The rigid supporting columns of the console include 3 electrical outlets.

8. There should be a free space of 450 mm between the lower shelf and the worktop, and 150 mm between the two shelves.
9. The table should have a drawer unit (both sides as double model) mounted under the worktop.
10. Each drawer unit should be 400 mm wide and should include a drawer and a sliding plate.
11. Fluorescent tube fittings (Inspection lamp) should be available. (Optional)

6. Linen Fold Table for clean area

1. Size (LxWxH) : 2000x1400x900 mm approximately.
2. The table should be specially designed for sorting, inspection (each piece of linen can be moved over an illuminated inspection panel) and folding of surgical dressing sets and individually packaged towels/gowns. The extended width also facilitates work with large dressing sheets. Work can be carried out comfortably, either sitting or standing.
3. The worktop should be made of a robust wood-based core material, surfaced with plastic laminate in a soft white colour that enhances the lighting for inspection of linen.
4. All edges of the worktop should be smooth.
5. The top should have a built-in opalescent (milky) plastic surface plate, 1000 x 600 mm, illuminated from underneath by two 25 W fluorescent tubes located beneath the top in a laminated recess.
6. The table should have two electrical outlets (one on each side).
7. The rigid frame should be made of stainless steel (304).
8. There should be unobstructed access to the working space, since the only supports needed along the front of the table are the corner legs. This also facilitates cleaning of floors.

7. Wire Storage shelf module for dirty/disinfection area

1. Size (LxWxH) : 1500x450x1900 mm approximately.

2. Construction should be based on single free-standing shelf modules for storage of clean linen, instruments, and packing material or sterilized goods, including disposables.
3. Moreover, two single modules can be placed back to back and combined as a double module unit.
4. If two units are to be connected, 10 S-hooks should be supplied.
5. The wire construction should allow good air circulation while permitting easy inspection of the goods.
6. The wire shelves should be made of special heavy-duty steel (304), chromium-plated and surface treated with clear epoxy varnish to facilitate cleaning.
7. The shelf unit should be easy to assemble on site and all parts should fit precisely.
8. Shelves should be mounted by means of plastic clamps onto circular rigid posts, with the adjustable height within a range of about 50 mm. Each post should include a height adjustable foot.
9. Each unit should include 5 shelves.
10. The shelf unit should have optional Ø 125 mm castors for using as a mobile storage unit by replacing the foot with castors.

8. <u>Wire Storage shelf module for Clean supply area</u>

1. Size (LxWxH) : 1525x455x1895 mm approximately.
2. Construction should be based on single free-standing shelf modules for storage of clean linen, instruments, and packing material or sterilized goods, including disposables.
3. Moreover, two single modules can be placed back to back and combined as a double module unit.
4. If two units are to be connected, 10 S-hooks should be supplied.
5. The wire construction should allow good air circulation while permitting easy inspection of the goods.
6. The wire shelves should be made of special heavy-duty steel (304), chromium-plated and surface treated with clear epoxy varnish to facilitate cleaning.
7. The shelf unit should be easy to assemble on site and all parts should fit precisely.

8. Shelves should be mounted by means of plastic clamps onto circular rigid posts, with the adjustable height within a range of about 50 mm. Each post should include a height adjustable foot.
9. Each unit should include 5 shelves.
10. The shelf unit should have optional Ø 125 mm castors for using as a mobile storage unit by replacing the foot with castors.

9. <u>Wire Storage shelf module for Sterile store</u>

1. Size (LxWxH) : 1525x455x1895 mm approximately.
2. Construction should be based on single free-standing shelf modules for storage of clean linen, instruments, and packing material or sterilized goods, including disposables.
3. Moreover, two single modules can be placed back to back and combined as a double module unit.
4. If two units are to be connected, 10 S-hooks should be supplied.
5. The wire construction should allow good air circulation while permitting easy inspection of the goods.
6. The wire shelves should be made of special heavy-duty steel (304), chromium-plated and surface treated with clear epoxy varnish to facilitate cleaning.
7. The shelf unit should be easy to assemble on site and all parts should fit precisely.
8. Shelves should be mounted by means of plastic clamps onto circular rigid posts, with the adjustable height within a range of about 50 mm. Each post should include a height adjustable foot.
9. Each unit should include 5 shelves.
10. The shelf unit should have optional Ø 125 mm castors for using as a mobile storage unit by replacing the foot with castors.

10. <u>Free Standing basket rack (15 Baskets) for Sterile store</u>

1. Size (LxWxH): 1850x480x2150 mm (Single) approximately, 1850x800x2150 mm (Double) approximately.

2. Quotations should be offered for both single and double basket storage racks to store wire baskets in sterile storage and/or as pre-storage of clean packed goods.
3. The rack should be designed as an open unit to promote aeration of sterilized goods and to make inspection of stored goods as easy as possible.
4. Should provide rigid, horizontal guide-rails, consisting of 50 x 20 mm steel profiles for loading and unloading the baskets by sliding the baskets on rail.
5. The guide-rails should be welded to a robust support column mounted on a rigid floor stand.
6. The columns should be joined by support frames on top and below the base of the rack.
7. To facilitate cleaning of the floor, the base should have a rigid construction that minimizes the number of legs needed for support.
8. Each leg should have an adjustable foot (± 25 mm).
9. The rack should be made of SS.
10. The single rack should be a free-standing section that holds 5 baskets in each vertical.

11. <u>Pass Box</u>

1. Area : Dirty to Clean supply, ETO to Sterile supply & Sterile Issue
2. Size : 600x600x600mm, internal
3. Should be made up of SS 304 sheets with double wall construction
4. Should have UV lights for safe storage of components
5. UV light should automatically switch off when any one door is opened
6. Pass-through chamber should be based on electrical sliding hatches and should fit all types of standard racks.
7. The chamber should consist of two electrically operated sliding hatches.
8. Each hatch should have its own 24 DC motor that powers a drive belt and ensures smooth operation, as well as its own convenient push-button control to ensure that both hatches cannot be opened at the same time.
9. The control should feature two modes of operation to open or close the hatch with a press button mechanism.
10. Should have door interlocking to prevent simultaneous opening of both the doors
11. Should have toughened glass paneling for easy visibility.

12. Stainless Steel Paneling for Sterilizer & Washer Disinfector

1. Size : To be measured at site as per actual conditions
2. All the sterilizers and washer disinfector should be recessed between the S.S. 304 quality panels.
3. The S.S. sheets should have 18 gauge thicknesses with superior finish to match it with equipment finish.
4. The sheets should be mounted on painted M.S. frame structure with adequate supports.
5. The panels should have the doors for service access from loading side
6. There should not be any gaps between panel & the equipment. Any small gaps should be sealed to ensure that it restricts the air movement.

13. Closed Transport Trolley from Sterile Store to OT

1. Size : 1400x750x1260 mm(LxWxH) (External) approximately.
2. A Closed Transport trolley is used for sterile goods handling, for which higher protection than normal dust protection is required, e.g. short transports between hospital buildings. Suitable for handling baskets or containers with a total capacity of 9 STU (1 STU = 600 x 300 x 300 mm) on three solid, removable shelves (3 x 3 STU).
3. Trolley should be fitted with large stainless steel wheels (Ø 160 mm) for easier maneuverability.
4. Should have two fixed and two swivel wheels with brakes.
5. Should be of fully welded stainless steel construction (minimum 18 gauges, 304).
6. The doors should open 270° for easy access and cleaning.
7. Trolley should have lockable doors and should include handlebars.

14. Linen Distribution & Storage Trolley

1. Size : 1020x740x1750 mm approximately.

2. Distribution trolleys should be ergonomically designed for convenient manual distribution of sterilized goods to the users or for returning used goods to the central processing area.
3. The trolley should be flexible and easy to handle and transport modular wire baskets and/or closed tote boxes, to increase handling efficiency and improve safety for the end-user, transport staff and the surroundings.
4. These trolleys should have horizontally mounted slide bars that act as supports for the baskets and/or tote boxes.
5. A heavy-duty stainless steel (304) bottom plate should protect the goods during transport.
6. A sturdy handle should be mounted on the bottom frame for convenient handling, even in narrow corridors.
7. The handle is so designed to permit the use of disposable plastic or reusable cloth covers for further protection during distribution.
8. The trolley should be made of heavy-duty polished stainless steel (304) and every detail is designed for easy cleaning and disinfection.
9. The wheels (2 fixed, 2 swivel) have a diameter of 125 mm and are made of rubber with ball bearings.

15. <u>Table Trolley for Dirty/Clean/Sterile Area</u>

1. Size : 1080x550x800 mm approximately.
2. The table trolley is made of all-welded medical grade stainless steel tubing.
3. The trolley should have handlebars.
4. The solid top and bottom shelves are made of heavy gauge stainless steel (304) with a ground and polished finish, and with a 12 mm raised edge all around.
5. The lower shelf is 300 mm above floor level. There are protective buffer rollers on all four corners.
6. The table trolley has 4 swivel wheels, mounted in ball bearings, for easy handling even in narrow passages.

16. Instrument Tray Big

1. Area : Various movement
2. Size : 450x250x70 mm approximately.
3. It should be modular design with high precision and should be designed for use with modular wire baskets through all phases of instrument processing: washing and disinfection (both manual and in an automatic washer-disinfector), ultrasonic cleaning, inspection and packing, sterilization, storage, distribution and usage.
4. It should be self-drying after disinfection in hot water (min.+85°C)
5. Instrument trays should be sturdy, jig-welded trays maintain their size and shape even if handled carelessly.
6. It should be stackable.
7. The tray should be made of stainless steel (304) wire net, with a maximum mesh size of 6.5 mm and a wire diameter of 1.5 mm. This design gives optimal cleaning results and at the same time prevents instruments from penetrating the sides of the tray.
8. All cross-points in the network and vertical wires to top and bottom frames should be point welded.
9. All free wire ends should be soft-polished to prevent injury when handled.
10. The bottom wire construction should include a rigid, 3 mm diameter, stainless steel (304) wireframe to provide space for airing between goods and work surface and to allow use on roller, belt and chain conveyors.
11. It should be electro-polished for smooth, clean surfaces and also suitable for ISO modular wire baskets.

17. Instrument Tray Small

1. Area : Various movement
2. Size : 340x250x70 mm approximately.
3. It should be modular design with high precision and should be designed for use with modular wire baskets through all phases of instrument processing: washing and disinfection (both manual and in an automatic washer-disinfector), ultrasonic cleaning, inspection and packing, sterilization, storage, distribution and usage.
4. It should be self-drying after disinfection in hot water (min.+85°C)

5. Instrument trays should be sturdy, jig-welded trays maintain their size and shape even if handled carelessly.
6. It should be stackable.
7. The tray should be made of stainless steel (304) wire net, with a maximum mesh size of 6.5 mm and a wire diameter of 1.5 mm. This design gives optimal cleaning results and at the same time prevents instruments from penetrating the sides of the tray.
8. All cross-points in the network and vertical wires to top and bottom frames should be point welded.
9. All free wire ends should be soft-polished to prevent injury when handled.
10. The bottom wire construction should include a rigid, 3 mm diameter, stainless steel (304) wire frame to provide space for airing between goods and work surface and to allow use on roller, belt and chain conveyors.
11. It should be electro-polished for smooth, clean surfaces and also suitable for ISO modular wire baskets.

18. <u>Modular Sterilizing baskets Big</u>

1. Size : 585x395x195 mm approximately.
2. Area : Various movement
3. It should be modular design with standard SPRI sizes and high precision and should be designed for sterilizing / processing as well as easy handling and management of the supply, storage and distribution of re-circulated sterilized goods.
4. It should be self-drying after disinfection in hot water (min.+85°C)
5. It should be sturdy, jig-welded trays maintain their size and shape even if handled carelessly.
6. It should be both nest able and stackable There should be special wire support to help making baskets both stackable (when the supports are folded into the basket) and nest able (when the supports are folded out)
7. The top frame should be designed such that it should serve as a handle grip for easy carrying even when heavily loaded.
8. There should be no sharp edges or wires.
9. The surfaces should be smooth to assure easy cleaning in a washer-disinfector.

10. The baskets should be made of electro-polishes heavy-duty stainless steel (304) and should have a rigid bottom frame that gives space for airing between goods and work surfaces and allow use on roller belt and chain conveyors.
11. It should be designed and manufactured in accordance with high quality specifications to assure long lifetime.

19. <u>Modular Sterilizing baskets Medium</u>

1. Size : 585x395x100 mm approximately.
2. Area : Various movement
3. It should be modular design with standard SPRI sizes and high precision and should be designed for sterilizing / processing as well as easy handling and management of the supply, storage and distribution of re-circulated sterilized goods.
4. It should be self-drying after disinfection in hot water (min.+85°C)
5. It should be sturdy, jig-welded trays maintain their size and shape even if handled carelessly.
6. It should be both nest able and stackable There should be special wire support to help making baskets both stackable (when the supports are folded into the basket) and nest able (when the supports are folded out)
7. The top frame should be designed such that it should serve as a handle grip for easy carrying even when heavily loaded.
8. There should be no sharp edges or wires.
9. The surfaces should be smooth to assure easy cleaning in a washer-disinfector.
10. The baskets should be made of electro-polishes heavy-duty stainless steel (304) and should have a rigid bottom frame that gives space for airing between goods and work surfaces and allow use on roller belt and chain conveyors.
11. It should be designed and manufactured in accordance with high quality specifications to assure long lifetime.

20. Staff Chair

1. Should be medium Back chair
2. Should rest on high quality 50mm castors on4 legs with cross reinforcement for sides with arm rest and foot stumps of PVC
3. Should have seamlessly upholstered seat and backrest, washable antimicrobial with poly foam cushion.
4. Colour of base should be black.
5. Should be height adjustable, broad, padded.
6. Should have upholstered arm rests and comfortable back rest.

21. Lab Stool without backrest.(SS)

1. Should have stainless Steel top
2. Should be height adjustable from 450mm to 680 mm, through mild steel threaded screws
3. Should have four legged base made of 25mm steel tube mounted on rubber shoes.
4. Should have Stainless steel ring for footrest.
5. Should be pre-treated Epoxy powder coated frame work.

22. Storage Cupboard

1. Should have size 500 mmL x 450 mmH x 400 mm depth approximately.
2. Material should be high quality, cold rolled, close annealed (CRCA) steel.
3. Should be provided with lockable doors

23. Waste Bin Pedal Operated-SS

1. Should be made up of high quality stainless steel.
2. Should have minimum capacity of 5 liters.
3. The covering lid should be open able by pressing the plate attached to the bottom.

24. Change Locker -4 Compartments

1. Change locker should have 4 compartments.
2. Should have 2 lockers at bottom and 2 at top.
3. Size of each compartment should be 20cm W x 80cm H x 45 cm D.
4. Should be of MS
5. Should be pretreated and epoxy powder coated.

25. Visitors Chair

1. Visitors chair should be ergonomically designed, sturdy and of good quality.
2. Should have comfortable seating and low back support.
3. Should have padded seats with anti-microbial upholstery of leather finish.
4. Should be with arm rests and fixed height.
5. Should have frame of MS tubing, multiple pretreated and finished with epoxy powder coating.

26. Open Storage Rack

1. Open racks should be made of stainless steel
2. Should be highly durable, and should have narrow holes for allowing ventilation.
3. Should be water resistant, disinfectant resistant and rust proof.
4. Should be provided with lockable castors

12. Approx. Dimensions: 180cm (H) x45 cm (W) x150cm(L) approximately.

5.

27. OFFICE TABLE

1. Should be wooden executive office table.
2. Should be high quality, aesthetic and ergonomic design.
3. Top should be made of pre laminated, of high density pressed wood, properly treated.
4. Should be flame and water retardant. Lipped on all sides
5. Should have an option for placing keyboard of computer

6. Should have one shelf on left side
7. Size should be (approx.):1200 mm(L)X800 mm(W)x750 mm(H)

28. Shoe Rack

1. Shoe rack to keep 12 pair of shoes.
2. Should be made up of MS powder coated rack with 4 tiers.
3. Should have length, breadth and depth to keeps shoes of all standard sizes.

29. Closed Sterilization Containers

1. Sizes should be - 300x290x110 units approximately.
2. Should have thermo lock drainage, steam penetration valve and stainless steel top.

30. Closed Sterilization Containers

1. Sizes should be - 300x290x140 units.
2. Should have thermo lock drainage, steam penetration valve and stainless steel top.

31. Closed Sterilization Containers.

1. Sizes should be - 590x280x260 units.
2. Should have thermo lock drainage, steam penetration valve and stainless steel top.

32. Issue/Receive Counter

1. Construction: Counter Top should be made of granite top
2. Should be aesthetically good
3. Should provision for placing CPU,UPS, Mouse, Keyboard etc

33. Paper Dispensing Trolley

1. Should be movable trolley for storing four different sizes of sterilizing wrapping paper sheets should be made of stainless steel tube.
2. Should have four ball bearing rubber wheels, of which two wheels should be equipped with brakes.

34. Basket Trolley

1. Should be suitable for transport of empty, stacked /nested, modular wire sterilization basket.
2. Should be mounted on a 4 swivel castors of 75mm dia.
3. Should be made up of stainless steel.
4. Should be provided with handle for easy transport.
5. Load capacity approx. 150 Kg.
6. Dimension should be (approx.): 750mm(L)X500 mm(W)x150 mm(H) approximately.

35. Computer

1. Processor should be Intel core i3 (the latest available in the market)
2. Should have 4 GB RAM
3. Should have 500 GB hard disk
4. Should have DVD writer
5. Should have built in LAN
6. Should have at least 2 high speed USB outlets
7. Should have 17" LCD Monitor
8. Should have Mouse, Keyboard etc
9. Should have suitable UPS.