

## AMENDMENT No -I Dated 16.08.2017

**Sub.:** Invitation for Quotations for supply of Low Value Items for below mentioned dept.

1. *Dept. of Community Medicine,*
2. *Dept. of Microbiology*
3. *Dept. of Forensic Medicine*
4. *Dept. of Pathology*
5. *Dept. of Dentistry*
6. *Dept. of Biochemistry* for *Kalpna Chawla* Medical College, Karnal, Haryana

**Ref: Invitation for Quotation Ref. No.:** HSCC/PUR/KCGMC/Low Value/Medical College Items/2017/MC-Aug (7) dated 7<sup>th</sup> Aug, 2017

The Schedule for Closing date & time for submission & receipt of Invitation of Quotation and Date and time of Opening of Tenders are extended as follows:

Sr. No.	DESCRIPTION	ITEM No.	Closing date & time for submission & receipt of tender	Date and time of Opening of Techno – Commercial Tenders
I.	Department of Community Medicine Equipment	1 to 18	22.08.2017at 14:00	22.08.2017 at 14:30
II.	Department of Microbiology List of Charts, Models & Museum Articles	As Indicated	22.08.2017at 14:00	22.08.2017 at 14:30
III.	Equipments for Department of <i>Forensic Medicine:</i>		22.08.2017at 14:00	22.08.2017 at 14:30
	Annexure - I: List of Weapons	64	22.08.2017at 14:00	22.08.2017 at 14:30
	Annexure - II: List of Photographs	30	22.08.2017at 14:00	22.08.2017 at 14:30
	Annexure - III: List of Models	69	22.08.2017at 14:00	22.08.2017 at 14:30
	Annexure - IV: List of Bones	3	22.08.2017at 14:00	22.08.2017 at 14:30
	Annexure - V: List of Poisons	156	22.08.2017at 14:00	22.08.2017 at 14:30
	Annexure - VI: List of Charts	94	22.08.2017at 14:00	22.08.2017 at 14:30
IV.	Department of Pathology		22.08.2017at 14:00	22.08.2017 at 14:30
V.	Department of Dentistry		22.08.2017at 14:00	22.08.2017 at 14:30

### 4. Dept of Pathology

#### To be Added :

##### ARTIST SECTION

Drawing Board size 42"x27"	1	
Drawing Board size 22" x 30"	1	
Instrument Box steadler	1	
Plastic Transparent Set square 10"	1 pair	
Plastic Scale transparent 18:	1	
Parallel ruler 18"	1	
Proportional Compass.	1	
Bowpen "Stanley" one for fine and one for thick line	2 (1+1)	
"T" scale 24" wooden	1	
"T" scale 48" wooden	1	
Frenat curves Plastic 1 set of 12	1 set	
Protractor Plastic Semiround 6" dia.	1	

Kent paper size 22"x30"	12
Scolor drawing paper 22"x30"	12
Drawing paper Norway 72 lbs.	12
Water colour tubes "Winsor and Newton"	24
Postercolours in different shades.	13
Reeves Indian Black ink.	12
Water colour box "peliken" Sable Hari brushes	16
Series No. 00 to 6 and 10	8
Speed ball nibs style A.B.C. &D.	1 set
Crequil Nibs	12
Drawing Nibs 303 and 304	12
Clip holders.	6

## GLASSWARE FOR DEPARTMENT OF PATHOLOGY

### Measuring Cylinders

50 ml-----10

100 ml ----10

500 ml ---10

### Pipettes

1 ml to 5 ml ---20 each

### Conical flask

100 ml to 1000 ml – 50 each

### Reagent Bottles

100 ml -----100

500 ml ----100

1000ml --- 100

### Beakers

100 ml ----30

250 ml ---30

500 ml ---30

### Glassroads for staining rack – 60

### Staining Trough ----60

### Funnel

Small ---- 15

Medium ---15

Large ----15

### Khom Tube ----200

### Test Tubes

#### Size

10 x 75 ----1000

12 x 75 ----1000

16 x 100 ---1000

The glassware should be of high quality **BOROSIL MAKE** for using in the laboratory .

**To Be added:**

**Storage cabinet for 10,000 Blocks in numerical arrangement -----Qty - 1**

1. Made of stainless steel with powder coated finish.
2. The internal drawer should be made of stainless steel / aluminium duly powder coated.
3. Each drawer having 8 compartments with capacity of 125 blocks approximately
4. Index card holder & handle to be provided on each drawer.
5. Handle to be provided on front panel
6. The cabinet should have door for dust free storage & is provided with lock & key
7. ISI Marked.
8. Sample to be shown before supply delivery.

## **6. REVISED SPECIFICATION OF DEPT. of BIOCHEMISTRY**

### **LIST OF LOW VALUE LABORATORY EQUIPMENTS IN BIOCHEMISTRY** **DEPARTMENT**

#### **1. Fume Cupboard (Bio Safety Cabinet Class II B2):**

**- 2 Nos.**

- Biosafety cabinet of class II, Type B2 (Total Exhaust) with vertical laminar airflow
- complying to EN12469:2000 with microprocessor based monitoring system.
- Automatic control of all functions and all safety alarm systems with double centrifugal fan to provide complete operator, product and environmental protection. Suitable for handling pathogens namely *Mycobacterium paratuberculosis*.
- Internal dimension (WxDxH) should be approximately 850X 700X 550 mm or more
- The cabinet should be fitted with 1 automatic safety service connection for gas, 1 for vacuum and 1 electrical socket
- Dual, long life ULPA/HEPA (H-14 grade, according to EN1822) filters for supply and exhaust airflow. The cabinet should consist of ducting facility on the top of the cabinet for direct ducting to facility exhaust system.
- The Cabinet should be supplied with a UV sterilizing lamp
- Frameless, shatter-proof sash with automatic UV shut-off on sash opening
- Machine should have low noise level ( below < 53 dB)
- The cabinet should have user friendly practical keyboard and display to inform
- laminar airflow and frontal air barrier velocity , residual lifetime of HEPA filter , UV lamp , total number of hours of operation, saturation level of HEPA filter, inside and outside Temperature
- Audio and visual alarms required for power failure, out of range or incorrect
- laminar airflow velocity and frontal air barrier velocity, end of life-cycle of UV lamp , fan-motor malfunction ,saturation of HEPA filters , un-correct position of front sash-window, blockage in the exhaust duct.
- Interior work area of a single piece of stainless steel and single piece HIGH GRADE stainless steel. Work surface should be consisted of sections easily removable for carrying out routine cleaning and/or require autoclaving sterilization procedures if so desired.
- Cabinet should be preferably coated with anti bacterial treatment/ solution to prevent microbial contamination.
- Cabinet should also be supplied with modular stand with castors.
- Air flow velocity should be at least 90 fpm; efficiency should be > 99.99% at 0.1 micron to 0.3 micron to provide 100% exhaust.
- Safety device: (i) Dual-wall construction surrounds the work zone with negative pressure plenums for maximum safety. (ii) Fail-safe system ensures that in case of exhaust failure
- Must meet American (NSF/ANSI) or European standard EN 12469 (type tested) or both. Must submit a copy of EN 12469 or NSF/ANSI certification along with the quote (it is mandatory and without the valid certificate the quote will be considered as non-responsive).
- Complete installation along with connection to exhaust ducting system will be the responsibility of the firm.

#### **2. Refrigerator (300 Litres or more)**

**- 1 No**

For storing blood plasma and other blood products, vaccines, other medical or pharmaceutical supplies. Also to cool samples or specimens for preservation. For faster pull-down and recovery times, it should have bypass refrigeration and microprocessor-based controls

##### **Technical Specifications**

1. Laboratory refrigerator should have 330 ltr capacities.
2. Temperature range from 2 deg C to 10 deg C.
3. It should have galvanized sheet steel construction, white powder coated and adjustable feet.
4. No welded joint to be exposed for rusting.

*Amal*  
*Vareedhan*

5. Insulation of high-grade pressure - foam material.
6. Lockable door with plastic magnetic sealing surround.
7. Automatic defrosting and condensed melt water evaporation.
8. Re-circulating air-cooling system.
9. Control panel with thermometer, main switch and temperature selection
10. Hermetically enclosed, low noise, vibration proof compressor.
11. Visual and a caustic signal alarm system.
12. Epoxy coated outside finish and SIS interior
13. Low noise, automatic defrosting. Freon free.
14. Should be CFC free.
15. Temperature indicators to be provided.
16. Power input to be 220-240V AC. 50Hz.
17. Should be CE or FDA or BIS approved product

### 3. Boiling Water Baths with lids having 8 - 12 holes - 6 Nos.

1. Useful For dual purpose. It should be a rectangular water bath with stainless steel trays having 8 to 12 holes and concentric rings, to accommodate 12 beakers flasks of 100 ml each. Optional tray capable of accommodating 250 ml flask and 500 ml flask may be made available.
2. Standard double wall construction. Inner chamber made out of highly polished stainless steel sheet of 304/316 grade and exterior made out of thick mild steel duly finished powder coated paint.
3. Glass wool insulation between sheers
4. Immersion heaters are provided for heating to attain temperature range from 5° C above ambient to 95° C.L 1 °C.
5. Digital temp. Indicator-cum-Controller with precise accuracy of  $\pm 1$  °C. The equipment to work on 220V AC 50 Hz single phase.
6. Minimum chamber size in mm & inches L x W x H 300 x 225 x 175 mm Approx Capacity approx 15 Itrs. atleast.
7. Should be CE or FDA or DIS approved product

### 4. Autoclave Electric ( Vertical) - 2 Nos.

1. The water reservoir shall have a capacity that is sufficient for minimum 10 cycles.
2. The reservoir shall have a float that reads the level of the water and indicates on the display when the reservoir needs to be refilled.
3. The sterilization chamber shall have a capacity of at least 5 litres, constructed of stainless steel of 304/316 grade
4. The sterilizer shall function with a micro - processor which controls a defined volume of distilled water that is pumped into a boiler, converted into steam and then injected into the sterilizing chamber.
5. The micro processor shall accurately control and monitor the sterilizing temperature and pressure.
6. The sterilizer shall have a keypad which controls the pre-set programs and the start control with a single touch.
7. Unwrapped Cycle - To sterilize unwrapped instruments the sterilizing cycle shall be constant at 134°C for 3.5 minutes. The total cycle time including warm up, pressurization and de-pressurization shall not be more than 12 minutes.
8. Wrapped Cycle - To sterilize wrapped instruments the sterilizing cycle shall be constant at 134°C for 6 minutes. The total cycle time including warm up, pressurization and de-pressurization shall not be more than 15 minutes.
9. Cycle for Delicate Items - To sterilize certain rubber, plastic and delicate items the sterilizing cycle shall be constant at 121 degrees C for 15 minutes. The total cycle time including warm up, pressurization and de-pressurization shall not be more than 24 minutes.
10. Digital Display for monitoring the systems throughout the processing cycle including the temperature, pressure and time elapsed.
11. Power supply - 220V, 50 Hz.
12. The product should be CE or FDA Certified

## 5. Balance - Semi-Micro

- 1 No.

### 1 Description of Function

1.1 Electronic Balance is required for precision weighing of Lab samples

### 2 Operational Requirements

2.1 Microprocessor based single pan Analytical dual range Balance with High accuracy & precision is required.

2.2 Reading of the weight by digital backlit LCD display.

2.3 The balance should have functions of piece counting, percent weighing, formulation,

Dynamic weighing with automatic and manual stand and provision for data interface- RS232 port

### 3 Technical Specifications

3.1 Weighing accurately up to 5/10th decimal place of 0.01mg/0.1mg

3.2 Fully automatic self-calibration technology- time and temperature controlled adjustment

3.3 Auto zero setting

3.4 One touch calibration and High Resolution weighing (cell)

3.5 Weighing capacity upto 220 gills.

3.6 Repeatability and resolution: 0.08mg

3.7 Linearity:  $\pm 0.2$ mg

3.8 Stabilization time < 5 second

3.9 Adjustment weight (Int. wt.) 200g

3.10 Adjustment weight (Ex. Wt.): 500 mg, 1 gill, 10g, 50gm, 100 gm, 200gm

3.11 Balance should have the following features>

- LCD/Backlit Display.
- Stainless Steel Large round weighing pan 80mm Dia
- With two built-in weights for constant accuracy over the entire weighing range
- Warning if the balance is not correctly levelled to ensure accuracy of the result
- Functional and convenient dismantling of the draft shield should have height of 15mm.
- "Smartac Show" shows how much of the entire weighing range has been used
- Programmable keys for shortcut access to preferred applications.
- Easy running of built-in diagnostics i.e. e.g. keypad test, repeatability test
- Supplier Should Be Authorized V.A.R of Company.

### 4 System Configuration Accessories, spares and consumables

4.1 System as specified

4.2 Should be supplied with standard external and internal weights as specified

### 5 Environmental factors

5.1 Shall meet IEC-60601-1-2:2001 (Or Equivalent 81S) General Requirements of Safety for Electromagnetic Compatibility Or should comply with EN 60601-1-2:2001

5.2 The unit shall be capable of being stored continuously in ambient temperature or 0 -50 deg C and relative humidity of 15-90% RH

5.3 The unit shall be capable of operating in ambient temperature of 15-30 deg C and relative humidity of less than 70% RH

### 6 Power Supply

6.1 Power input to be 220-240V AC, SOH7 fitted with Indian plug

6.2 Should Be Supplied With Battery Backup System for voltage regulation and 30-60mts backup.

6.3 Rescuable overcurrent breaker shall be fitted for protection

### 7 Standards, Safety and Training

7.1 should comply with ISO 9001 with auto validation with Prmet

7.2 Should be FDA or CE or IEC or SIS approved product

7.3 Electrical safety conforms to standards for electrical safety IEC-60601-1:2001

7.4 Manufacturer/Supplier should have ISO certification for quality standards

5. Colorimeter

- 6 Nos.

1. Photoelectric colorimeter with 8 filter digital (490,520,540,570,610,620,650, 700 nm)
2. Digital colorimeter should be highly stable and accurate ideal clinical instruments for blood and chemical analysis.
3. Should have 8 filters with battery option.
4. Range: 400nm to 700nm filters 8 high standard filters, Accuracy:  $\pm 0.010$  Abs
5. Output Optional, Density 0 to 1.99. display 2.5 digit LED display. detector selenium photo cell light.
6. Source 6.2V 0.3 Amp. Tungsten filament Lamp,
7. Min volume 1 ml
8. Power 230V+J- 10 SOHI Ac.
9. Size (LxBxH) 225 x 230 x 150mm (Appox),
10. Weight: not more than 4 kg.
11. ISO certi fled
12. 2 year warranty

Accessories:

- Test Tubes 5 Nos.
- Light Source Bulb
- Dust Cover
- Instruction Manual

6. Stop Watch

- 4 Nos.

Stop watch of good quality reading at 1/5 second with LED/LCD display reading at 1/5 display

7. All Glass Distillation Plant (Vertical)

- 3 Nos.

Technical specifications:

- I. The glassware should be made of high quality borosilicate quartz glass (preferably quartz glass) to withstand high heat.
2. Apparatus capacity should be of atleast 4 litres/Hr.
3. Should be double stage for providing Gradel/Gradell water. suitable to be used on HPLC system
4. Should have metallic stand and other accessories.
5. Stand should be made of rust free material.
6. Standards heating elements of 3 to 4 KW to be used.
7. An automatic cut off device should be attached.
8. Heater should be of quartz for immediate output of distilled water. Apparatus should consist of high quality Borosilicate Boiler with built in water leveler.
9. Output water should be pyrogen-free with conductivity less than 1 micro siemen. ph 6.9-7, distillate temp 65-75 degC.
10. Automatic cut off device or safety control module.
- II. Power input to be 220-240 VAC. 50 Hz.
12. Manufacturer should have ISO or CE certification for quality standards

8. Desiccators Large Size

- 6 Nos.

Desiccators large size used to protect chemicals which are hygroscopic or which react with water from humidity. It should be circular and made up of boro silicate glass. Both Vacuum & plan Desiccators are provided with a thick perforated Polypropylene disc with a big hole in the center for easy lifting. The tiny holes in the disc provide air troughs & support to the dishes. However porcelain discs are advisable in case of incandescent crucibles

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## 9. Desiccators Small Size

- 6Nos.

Desiccators small size used to protect chemicals which are hygroscopic or which react with water from humidity. It should be circular and made up of borosilicate glass. Both Vacuum & plan Desiccators are provided with a thick perforated Polypropylene disc with a big hole in the center for easy lifting. The tiny holes in the disc provide air troughs & support to the dishes. However porcelain discs are advisable in case of incandescent crucibles.

## 10. Centrifuge Clinical for lab work

- 6+2 Nos.

### 1. Description of Function

1.1 Centrifuges are required in the Laboratory to separate various components of Blood and any other liquid sample for analysis

### 2. Operational Requirements

2.1 Aerodynamic compact construction for vibration free performance

2.2 Table top version

### 3. Technical Specifications

3.1 Should have multiple swing out Rotor heads (minimum 3) for different tube sizes.

3.1.1 It should have automatic Rotor identification system

3.1.2 Ease of change of Rotor head without applying any force. Preferably no puller should be required for changing of Rotor head

3.2 Tube Capacity: No. 12 Size 5 - 15 ml

3.3 Should have a digital timer and digital speed control.

3.4 SOLY should be made of strong fabricated & corrosion resistant steel

3.5 Control panel - for start/stop switch, dynamic brakes for quick deceleration, step less speed regulator with zero start switch & speed indicator with timer and protective fuses and should have LCD/LED display.

3.6 Door interlock - Safety lid lock to prevent lid opening during centrifugation and gas hinge to prevent door falling

3.7 Maintenance-free brushless drive motor with exact speed preselection and display Speed range 100 to 6000 rpm and above, accuracy  $\pm 1$  rpm.

3.8 Low sample temperature rise during centrifugation

### 4. System Configuration Accessories, spares and consumables

4.1 Centrifuge complete with rotors.

4.2 Tube Holders as appropriate

### 5. Environmental factors

5.1 The unit shall be capable of operating continuously in ambient temperature of 10-40deg C and relative humidity of 15-90%

5.2 The unit shall be capable of being stored continuously in ambient temperature of 0-50deg C and relative humidity of 15-90%

### 6. Power Supply

6.1 Power input to be 220-240V AC, 50Hz as appropriate fitted with Indian plug

6.2 Voltage corrector/stabilizer of appropriate ratings meeting ISI Specifications. (Input 160- 260 V and output 220-240 V and 50 HZ)

### 7. Standards, Safety and Training

7.1 The supplier should be ISO certified for quality standards

7.2 Should be FDA or CE or UL or BIS approved product

2 year warranty with 5 year AMC/CMC

] 1. Digital pH Meter

- 3 Nos.

1. Description of function: will be able to measure precisely mEq pJI of an) solution.
2. Operational requirement: combined electrode with digital display of pH.
3. Automatic Temperature Compensation & Manual Temperature Compensation enabled
4. Visual end point signal
5. 200 pH measurements memory size
6. Technical specification
  - pH: (1) range: -2.00 to 16.00 (2) Resolution: 0.1 pH (3) accuracy error limit: ±0.01pH, (4) calibration: at least 2 point and maximum 5.
  - ORD: (1) RANGE: = -2000 to 2000mv (2) Resolution: 1 my.
  - Temperature: (1) range: -5-100 C, (2) Resolution: 0.10 C (3) Accuracy: ±0.1 C (4) calibration: offset range ± 1.0 C.
  - IQ Documents
  - Upgradable to ISM Electrodes
4. System Configuration Accessories, spares and consumables
- 4.1 Should be supplied with two level standard pH solution / pH buffers.
5. Environmental factors
- 5.1 Shall meet (8IS) General Requirements of Safety for Electromagnetic Compatibility. or comply with 89/366/EEC; EMC-directive.
- 5.2 The unit shall be capable of being stored continuously in ambient temp of 0-50 deg C and relative humidity of 15-90%
- 5.3 The unit shall be capable of operating in ambient temperature of 20-40 deg C and relative humidity less than 70%
6. Power Supply
- 6.1 Power input to be 220-240V AC, 50Hz fitted with Indian plug
7. Standards, Safety and Training
- 7.1 Should be FDA or CE or 8IS approved product
- 7.2 Electrical safety conforms to standards for electrical safety IEC-60601-1 IS-13450
- 7.3 Manufacturer / Supplier should have ISO certification for quality standards.

13. Ultra Violet UV Lamp

-1 No.

Features: high turbulence: non wetting surface; high reliability low maintenance

14. Bottles Dispenser (Research Model)

- 09 (04+05) Nos.

Bottle dispenser should be designed for performance handling of liquids from a large variety of bottles and flasks, the dispensers combine the latest in dosing technology, high tech materials and ergonomic design. As a result, users benefit from universal chemical compatibility, ease of operation, superior safety and low maintenance.

Should be ISO & CE certified  
Superior chemical resistance.  
Long lasting performance stability.  
Comfortable and convenient in use.  
Solid, yet simple construction.  
Instant volume setting.  
In-lab calibration.

Autoclavable at 121°C fully assembled.  
Supplied with 5 boule adapters  
NABL Calibration certificate preferred

## 15. Electrophoresis Apparatus with Power Supply for Paper PAGE AGAROSE.

- 6 Nos.

Chambers - total 6

### 1. For Paper electrophoresis, horizontal - 2 Nos.

Paper electrophoresis system, cellulose acetate system suited for standard and wet cellulose paper electrophoresis, support adjustable for different strip lengths. can adjust strip dimensions of upto 24X20 cm, Acrylic made, with lid, platinum electrodes. red and black connecting cords,

Suitable for standard and wet cellulose acetate electrophoresis of haemoglobin, serum proteins, isoenzymes, urine proteins, lipoproteins and glycoproteins, can adjust multiple gel sizes available commercially

### 2. For gel (agarose) electrophoresis - 2 Nos.

#### a. Small system - One

Acrylic made, Innertank 215 x 141 x 55 mm, with lid

Trays:

130 x 130 mm - 1 No.

130 x 65 mm - 2 Nos.

65 x 60 mm - 4 Nos

No. of combs:

13 Well Analytical Acrylic Comb 1.5 mm thick x 1 No.

8 Well Analytical Acrylic Comb 1.5 mm thick x 4 Nos.

3 Well Preparative Acrylic Comb 3 mm thick x 1 No

Universal gel casting tray. Platinum electrodes, Red and black connecting cables

#### b. Large system - One

Acrylic made, Inner tank 39.5 X 23 X 9 cm, with lid

Trays:

200 x 100 mm - 1 No.

200 x 200 mm - 1 Nos.

200 x 250 mm - 1 Nos

Combs: 20 well (1 mm thick) X 2 Nos,

2 gel casting dams, Platinum electrodes. Red and black connecting cables

### 3. Vertical electrophoresis (PAGE)

#### a. Mini system - One No.

Vertical dual mini Gel, Acrylic made, with lid. Gel Size: 8 x 7 cm x 2,

Upper buffer tank dimension: 70 x 70 x 43 mm,

Lower buffer tank dimension . 150 x 130 x 115 mm,

Combs:

7 Well Teflon Comb 0.5 mm-2 Nos.

7 Well Teflon Comb 1 mm-2 Nos.

Teflon Spacers:

-

0.5 mm Teflon Spacers - 4 xos.  
1 mm Teflon Spacers - 2 Nos.

Glass plate: Notched and Rectangular 2 sets of glass plates, 2 sets of Clamp and screws, Water circulation, Gel casting unit, red and black connecting cables, Platinum electrodes.

b. Large system - One No.

Acrylic made. with lid, Dual gel system, Gel Size. 16 x 20 cms x 2 gels,  
Upper Buffer Tank Dimension: 200 x 75 x 20 mm  
Lower Buffer Tank Dimension: 270 x 100 x 115 mm  
Combs: 20 Well Teflon Comb 1 mm01-2 Nos  
Teflon Spacers: 1 mm Teflon Spacers 6 Nos.  
Red and black connecting cables, Platinum Electrodes, Water Circulation,  
Glass Plate: Notched and Rectangular 2 sets.  
Clamp and Screws: 4 sets.  
Gel Casting Unit

Power supplies - One

Output range upto 500 V, adjustable in 1 V steps, 0.01-2.5 A, adjustable in 0.001 A steps. Upto 500 W, fully adjustable in 1 W steps.

Mode!- programmable. constant voltage, constant current, or constant power with facility for auto crossover

Terminals- 4 pair of recessed banana jacks in parallel

Timer control of 1-99 in 59 min. fully adjustable

Pause/resume function.

Programmable- memory for methods storage and real time clock.

Automatic recovery after power failure

LCD Display

Proper safety <IEC> electrical compliance.

Safety) No-load detection, sudden load change detection. ground leak detection, overload/short circuit protection, overvoltage detection, input line protection. auto power-up after power failure.

Input power Suitable to Indian power supply OR 110 240 V AC, 50/60 Hz

Operating conditions 0-40°C. 0-90% humidity

Appropriate CCI ISI etc certification

## 16. Fully Automated Spectrophotometer

-1 No.

1. Wavelength range: 190 to 1100 nm.
2. Spectral bandwidth: 0.5 to 4 nm.
3. Light Source(s) ~(-)\ halogen Xenon lamp and deuterium lamp built-in light source auto position adjustable.
4. Detector Type: Silicon photodiode,
5. Wavelength Accuracy: ±0.5 nm for entire range.
6. Spectral Resolution: 0.1 nm increment.
7. Absorbance Precision: Absorbance: ±4 to 4 Abs, Transmittance: 0% to 400%, accuracy: ±0.01 Abs at 0.5 Abs, ±0.008 Abs at 1.0 Abs.
8. Photometric System: Double beam optic.
9. Wavelength Scanning speed: 3600 nm / min.
10. Power requirement: 220 to 240 V. AC 50Hz.
11. Environmental requirement: Temp 15 to 40°C. Humidity: 30-70%.
12. Output device: UV PC format.
13. PC Compatibility: provided with software External control possible via USB.
14. Should provide Quartz cuvette: 1ml and 3ml Capacity.
15. Should provide glass cuvette 10ml and 3ml capacity.
16. Facility for small sample volumes (of 50µL, 25µL and 5µL micro-volume cells) measurement with required accessory should be included
17. Sample detection for RNA and Protein.
18. Maximum sample concentration: 750-1000 ng / microlitre of dsDNA.
19. Measurement Time < 5 seconds.

- 20. PC with software Windows XP 12001 or inbuilt LCD Screen.
- 21. System should be US FDA or European CE or BIS approved

17. Sprit Lamp - 50 Nos.

Spirit lamp should be of top quality made up of premium raw material with a excellent functioning and durability

18. Charts - Qty as per list.

List Enclosed at Annexure itA" - given below:

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## ANNEXURE A

Charts

- Qty as per list.

### List of charts & models required for the Department of Biochemistry

	----- rille -----	
1	Isomerism- Cis-trans-isomers. Conformers. Optical isomers, The aconitase reaction	
2	Biomolecules I- Isomer classes of COH12Clmids	
3	Biomolecules II- Acetyl CoA	
4	Reaction Kinetics- Activation energy, reaction rate, Reaction Order	
5	Acids and bases-Acids and bases, pKa values in the body, Buffers	
6	Redox Processes-Redox Reactions, Reducing equivalents, Biological redox systems	
7	Classification of sugar - Reaction of the monosaccharides. Pentose phosphate pathway	
8	Oligosaccharides and Glycoproteins- Heparin, Hyaluronic acid. Oligosaccharide in immunoglobulin (IgG), Glycoproteins	
9	Steroid structure - Steroid building blocks, 3D structure, Thin-layer Chromatography	01
10	Steroid overview- Steroids. Bile acid-steroid hormones	01
11	Chemistry and properties - Amino acids: functions, Optical activity Dissociation curve of histidine	027
12	Peptide bonds Peptide bonds. Resonance. Peptide nomenclature-Conformation of the peptide chain	01
13	Secondary structure - Helix- Collagen Helix Pleated-structure, B-Turns	0
14	Molecule models: Insulin - Structure of insulin, Insulin (Monomer)	01
15	Isolation and analysis of proteins - Salt precipitation, Dialysis, Gel filtration. SDS polyacrylamide electrophoresis	01
16	Base and nucleotides - Nucleic acid bases, Nucleosides, Nucleotides, Oligonucleotide. Polynucleotide	01
17	RNA- Ribonucleic acids -RNA, Transfer RNA (tRNA)	-1- 01
18	Molecular model: DNA and RNA - DNA: Conformation, RNA	01
19	Enzyme Kinetics I - Michaelis-Menten kinetics. Isothermal and allosteric enzyme	01
20	Inhibitors - Inhibition of enzyme, Kinetics of inhibition	01
21	Enzymatic analysis Principle of spectrophotometry, Assay of lactate Dehydrogenase activity, enzymatic determination of glucose	01
22	Allosteric regulation - Aspartate carbamoyltransferase reaction, Kinetics, R and T conformation, Structure of a dimer,	01
23	Transcription. Control - Functions of regulatory proteins	01
24	Hormonal Control - Principles of hormone action, Hormonal regulation of glucose metabolism in the liver	01
25	ATP. ATP: structure, Hydrolysis, synthesis, Types of ATP formation	01
26	Ellerctic COH12Clmids Energetic coupling. Substrate level phosphorylation	01
27	Tricarboxylic acid cycle: reactions- Tricarboxylic acid cycle. Oxidative phosphorylation	01
28	Roseidtor- Chain- COEmonents of the respiratory chain, ATP synthase	01
29	ATP synthesis Redox synthesis of the respiratory chain. ATP synthesis	01
30	Regulation- respiratory control. Uncoupling,	01
31	Glycolysis Glycolysis: balance. Reactions, Enzymes, regulation	01
32	Pentose Phosphate Pathway - Pentose phosphate pathway: oxidative part. Reactions.	01
33	Gluconeogenesis - Gluconeogenesis	01
34	Glucocorticoid metabolism - Glucocorticoid metabolism. Glucocorticoid	01
35	Regulation of carbohydrate metabolism, Glucose 2,6-bisphosphate	01
36	Diabetes mellitus -Insulin Biosynthesis, Effects of insulin deficiency	01
37	Overview - Fat metabolism.	01
38	Fatty acid degradation Fatty acid degradation: B- Oxidation. Fatty acid	01
39	Fatty acid synthesis Fatty acid synthesis	01
40	Synthesis of Cholesterol - Cholesterol biosynthesis	01
41	Protein Metabolism: overview - Protein metabolism	01
42	Transamination and Deamination - transamination	01
43	Amino acid degradation. Amino acid degradation	01

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44	Urea Cycle - Urea cycle	
45	Nucleotide degradation - Nucleotide degradation Hyperruricemia(gout)	
45	Purine and pyrimidine biosynthesis - Components of nucleobase synthesis	
46	Heme biosynthesis - Heme biosynthesis,	
47	Heme degradation - Degradation of heme groups,	
48	Structure of cell- Comparison of prokaryotes and eukaryotes, Structure of an animal cell	
~	Structure and Components - Structure of the plasma membrane	
50	Transport Processes - Permeability of membranes, passive and active transport, Transport processes	
51	Transport proteins - Transport mechanisms. Glucose transporter Glut - I, Aquaporin-I, Sarcoplasmic Ca <sup>2+</sup> pump,	
52	Iron channels - Voltage-gated Na <sup>+</sup> channel in Streptomyces lividans	
53	Membrane receptors - Principle of receptor action. Insulin receptor, 7-Helix receptors, T-cell receptor.	
54	Protein sorting- protein sorting, Translocation signals, Exocytosis	
55	Protein synthesis and maturation - Protein in the rough endoplasmic reticulum, protein glycosylation	
55	Protein maturation - Protein folding in the rER. Chaperones and chaperonins, protein import in mitochondria	
56	Replication - Mechanism of DNA polymerases. Replication in E. coli,	
57	Transcription - Transcription and maturation of rRNA: overview, Organization of the PEP-CK gene, Process of transcription	
58	Transcriptional Control- Initiation of transcription, Regulation of PEP-CK transcription	
59	RNA Maturation - 5' and 3' modification of rRNA: Splicing of hnrN: A~SP, 117ic, e, o, so7m, e, t- ~ ~	
60	Amino acid activation - The genetic code, Amino acid activation Asp-tRNA- Ligase ( Dimer)	
61	Translation I: initiation - Structure of eukaryotic ribosomes. Polysome Initiation of translation in E. coli	
62	Translation II: elongation and termination - Elongation of protein biosynthesis in E. coli	
63	Antibiotics - Antibiotic: overview, Intercalators, C Penicillin as suicide substrate	
~	Mutation and repair- Mutagenic agents. Effects, Repair mechanisms	
65	DNA cloning - Restriction endonucleases. DNA cloning	
<b>66</b>	DNA sequencing - Gene libraries, Sequencing of DNA: Sanger, Maxam-Gilbert, Next-Gen	
67	PCR and protein expression - Polymerase chain reaction ( PCR). DNA electrophoresis, Over expression of proteins	
68	Genetic engineering in medicine- DNA fingerprinting, Diagnosis of viral DNA using RT-PCR. Gene therapy.	
69	Hemoglobin - Hemoglobin structure, Hemoglobin allosteric effects	
70	Iron metabolism - Distribution of iron, Iron metabolism	
~1	Acid-base balance - Hydrogen ion concentration in the blood plasma Acid-base balance. Buffers system in the plasma	
72	Immune response - Simplified scheme of the immune response	
73	T-cell activation Antigen receptors, T cell activation,	
~	Complement system- Complement activation	
<b>7S</b>	Antibodies - domain structure of Immunoglobulin G, Classes of immunoglobulins	
76	Monoclonal antibodies - immunoassay Monoclonal antibodies Immunoassay	
77	Carbohydrate metabolism - Gluconeogenesis: overview. Fructose and Galactose metabolism	
78	Lipid metabolism - lipid metabolism Biosynthesis of ketone bodies	
79	Bile acids Bile acids and bile salts, Metabolism of bile salts,	
-80	Cytochrome P450 System S-Cytochrome P450 - Dependent monooxygenases : reactions	
81	Urea-Urine, Organic constituents, inorganic constituents,	
82	function in the acid-base balance - Proton secretion Ammonia excretion	
83	Renal hormones - renal hormones, Renin angiotensin system,	
~84;	Uterine contraction - Organization of striated muscle, Mechanism of muscle contraction	
85	Muscle metabolism 1 Cori and alanine cycle, Protein and amino acid metabolism	
<b>JS</b>	Muscle metabolism 2 Cori and alanine cycle, Protein and amino acid metabolism.	
87	Calcium metabolism-Function of Calcium, Bone remodelling, Calcium Homeostasis	
88	Collagens - Structure of collagens, Biosynthesis.	
<b>79"</b>	Extracellular matrix - Extracellular matrix, Fibronectins, Proteoglycans	
90	Lipid - soluble vitamins - Vitamin synthesis, Lipid-soluble vitamins	
91	Water- soluble vitamins 1 - Water- soluble vitamins I	
~	Water- soluble vitamins 2 - Water- soluble vitamins II	

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93	Basics - A. Hormones: overview. A. Hormonal r.;~ul~ ~~tem		01
94	Metabolism of steroid hormones - Biosynthesis of steroid hormones Inactivation of steroid hormones		01
95	Metabolism of Peptide Hormones- Biosynthesis, degradation and inactivation.		01
96	Mechanisms of action Mechanisms of action signal transduction		01
97	Second messengers - Cyclic AMP. Inositol 1,4,5-trisphosphate and diacylglycerol. Calcium ions		01
98	Signal cascades Insulin: signal transduction, Nitric Oxide (NO) a mediator.		01
99	Apoptosis Cell proliferation and apoptosis. Regulation of apoptosis		01
100	Oncogenes - Proto-oncogenes: biological role. Oncogene products: biochemical functions.		01
101	Sanaer Fredrik		01
102	Krebs Sir Hans Adolf		01
103	J.D. Watson & H.F.C. Crick		01
104	Jacob & Monod		01
105	Lehninger		01
106	Carl Neuberg, Father of Biochemistry		01
107	B.C. Guha Father of Biochemistry in India		01
108	Carl Ferdinand Cod		01
109	Arthur Kornberg		01
110	Thomas B. Kochberg.		01
111	Maude Menten.		01
112	Leonor Michaelis		01
113	Linus Pauling.		01
114	Raj Shankar.		01

**NOTE:**

Note: 1. The portraits of all the scientists (Sr. No. 01 to 114) should preferably be provided on a laminated, wall mountable board. Each portrait should also be accompanied with the following details below each of the Photograph:

- Name of scientist
- Birth year - Death year (if applicable)
- A brief mention of their most significant contribution in the field of Human Physiology (upto 30 words or less).
- All charts must be quoted separate for each charts

Following details should be mentioned above each of the Photograph:

"DEPARTMENT OF BIOCHEMISTRY, KCGMC, KARNAL" in single line.

All portrait Charts should be thick Laminated & PVC Mounted & must be quoted separately for each charts.



**TO BE ADDED :**

**Specifications of Items for Department of Forensic Medicine**

<b>Sr. No.</b>	<b>Item Name</b>	<b>Specifications</b>
1	SLR camera with accessories.	DSLR camera with accessories (Made of Sony/Nikon/Canon) 1. Min 16MP with external flash with 16GB Class 10 SD card and twin Lens kit (18-55mm and 55-250mm with original manufacturer lens) 2. UV Lens filter and CP Lens filter (Hoya) 3. Lens hood petal type, silicon rubber 4. Tripod: 2 way fluid head, quick release mechanism, spirit level, geared lockable center column with braced 3 section leg, rubber legs. 5. Flash: Wireless flash. Approx 60m (197ft.) at ISO 100. AA/LR6 battery
2	Digital Spectrophotometer	Imported Digital spectrophotometer with PC control through software for programmable measurements, compatible for data storage on USB stick U.V. Visible type, wavelength range: 190 – 1100nm Optical system: true dual beam Detector: Silicon photodiode Band pass/bandwidth 0.5 nm - 4 nm (variable) Absorbance range of greater than 5 A, stray light measurements greater than 0.00003 %T @340 nm in the UV/Vis wavelength range. Scan speed upto 3600 nm/min Facility for small sample volumes (of 50µL, 25µL and 5µL micro-volume cells) measurement with required accessory should be included
3	Refrigerator	Capacity range 300-380 L Temperature 2-8°C Preferably roller mounted. Adjustable shelves. Battery backup. Durable rust free exterior. Durable unbreakable interior. Control panel with temperature alarm, on/off switch and digital thermometer, interior lighting, drip tray and defrosting arrangement. Adequate circulation of air to ensure even cooling by DUCT system. Door with lock. Inside of door provided with rack. Door hinges and latches should be chromium plated. Control panel with temperature alarm, ON/OFF switch with power on indicator, digital thermometer, temperature display. Electronic automatic temperature control, operable at 220 V, 50 Hz, single phase AC supply.

4	LED TV with DVD Player with USB Slot	40 INCHES along with DVD Player 1. USB 2 Side Support. 2. Fully HD & HDMI Support. 3. AV/Composite input slot compatible with newer devices. 4. Built in Woofer & Wi-Fi 5. Photo Sharing Plus 6. Photo Frame Mode 7. USB - Super Multi Format Play09oi 8. Mobile High-Definition link (MHL) 9. FM Radio 10. Solid Durability With Enhanced Protection Features. <b>Power:</b> AC 100-240 V 50/60 Hz <b>Other:</b> Five Star Rating
5	Instrument Trolley	Stainless steel instrument trolley with three shelves with guard rails on three sides. -With swivel castors Small :- 66x44x87 cm
6	The Museum specimen Jars	sizes 25x25x12 cms Qty- 30 pieces size 25x25x25 cms Qty-30 pieces

All other terms & Conditions remains unchanged.

General Manager (Procurement)