

9. RESOURCE REQUIREMENT FOR MEDICAL LABORATORY TECHNOLOGY

9.1 PHYSICAL RESOURCES

9.1.1 SPACE REQUIREMENT

The total space for lecture halls, laboratories may be worked out as per latest AICTE norms

9.1.2 LIST OF EQUIPMENT

Sr. No.	Item	Quantity
LIST OF CHEMICALS FOR CHEMISTRY LABORATORY		
1.	Ferrous ammonium sulphate (Analytical reagent)	3 x 500 grams
2.	Oxalic Acid (Anal R)	2 x 500 grams
3.	Potassium Permanganate (BDH)	500 grams
4.	Sodium Hydroxide (BDH)	2 x 500 grams
5.	Sulphuric Acid (AR)	1 litre
6.	Hydrochloric Acid (AR)	1 litre
7.	Sodium carbonate (Anal. R)	2 x 500 grams
8.	Phenolphthelene (BDH/Merck)	10 grams
9.	Methyl orange (SDH)	10 grams
10.	Ethyl Alcohol	4 x 500 ml
11.	Methyl Alcohol	6 x 500 ml
12.	Nitric acid	1 litre
13.	Glecial Acid (CP)	1 litre
14.	Ammonium sulphate (BDH)	250 grams
15.	Copper sulphate (BDH)	250 grams
16.	Glucose (BDH)	250 grams
17.	Sucrose (BDH)	250 grams
18.	Citric Acid (BDH)	250 grams
19.	Acetone)BDH)	500 grams
20.	Ascorbic Acid (BDH)	100 grams
21.	Olive Oil	500 grams
22.	Potassium Hydroxide (BDH)	2 x 500 grams
23.	Iodine	1 x 500 grams
24.	Calcium Chloride (BDH)	500 grams
25.	Ferric chloride (BDH)	500 grams
26.	Starch	500 grams
27.	Buffer Table (pH – 4 to pH/0)	1 Bottle each
28.	Fructose	250 grams.
29.	Gelatin	250 grams.
30.	Benzaldehyde	500 ml

Sr. No.	Item	Quantity
EQUIPMENT AND GLASS WARES FOR CHEMISTRY LABORATORY		
1.	Chemical Balances	10
2.	Pan Balance	3
3.	Electric Balance	1
4.	Gas plant	1
5.	Bunsen Burners	30
6.	Distillation plant	2
7.	Cup board (steel)	10
8.	Pipette (1 ml, 5 ml, 10 ml)	3 dozen each
9.	Burettes 20 ml	2 dozen
10.	Beaker 250 ml	2 dozen
11.	Weighing Bottles	4 dozen
12.	Winchester bottles	6
13.	Funnels 4"	1 dozen
14.	Funnels 2"	2 dozen
15.	Burette stands with clamping system	1 dozen
16.	Measuring cylinder 50 ml	1 dozen
17.	Volumetric flasks 250 ml, 100 ml, 500 ml	1 dozen each
18.	Glazed tiles	2 dozen
19.	Beakers 1000 ml	6 dozen
20.	Dropper	3 dozen
21.	Conical flask 250 ml	3 dozen
22.	Test tube racks (PVC rack)	3 dozen
23.	Test Tube	6 dozen
24.	Reagent Bottles	2 dozen
25.	Filter paper Whatman	1 rim sheets
26.	Glass rod	20 x 500 gms
27.	Fractional weight box	10
28.	Weight box	10
29.	pH meter	2
30.	Hot air oven	1
31.	Refrigerator 265 litre	1
32.	Spatula	10
33.	Centrifuge Tubes Borosil-C gradation	6 dozen
34.	Wash bottle (polythene)	20
35.	Pipette stand	5
36.	Glasstube	2 x 500 grams
37.	Wire gauge	2 dozen
38.	Reagent bottles 500 ml Glass (Borosil)	2 dozen
39.	Water bath (electric) C thermostat control $37^{\circ} \pm 0.5^{\circ}\text{C}$	4
40.	Bottles wide mouth and narrow	2 dozen

Sr. No.	Item	Quantity
REQUIREMENT OF EQUIPMENT FOR ANATOMY AND PHYSIOLOGY LABORATORY		
1.	Sphygmomanometer	6
2.	Stethoscope	6
3.	Skeleton (Human) Articulated and disarticulated	1 set each
4.	Models of different parts and system of body like heart, kidney, liver, stomach, brain, eye, ear, skin, excretory, lungs, etc – different system, cardiovascular system, reproductive system, urinary system, endocrine, sympathetic, CNS	1 set each
5.	Microscopes	15
REQUIREMENT OF GLASS WARE (ANNUAL) FOR HAEMATOLOGY LABORATORY		
1.	Microscopes	20 Nos.
2.	Haemoglobin tube (Sahli Hellige, square)	36 Nos.
3.	Digital colorimeter with Factor (Photocolorimeter) 1 ml	6
4.	Microscopy Binocular	20 Nos.
5.	Haemoglobinometer (Sahli)	30 Nos.
6.	Water 12" x 10" x 10"	2
7.	Haemoglobin pipette	20 Nos.
8.	Stirrer	5 Nos.
9.	Haemoglobin comparator (Sahli)	20 Nos.
10.	Dropper	20 Nos.
11.	Bottles 1 litre capacity	20 Nos.
12.	Test tube 4"x3"/2" capacity (specially meant for spectro-photo meter)	10 Dozen
13.	WBC pipette	24 Nos.
14.	Neubauer counting chamber (Improved)	10 Nos.
15.	Bottles 1 doz capacity screw	10 Nos.
16.	Cover slip 0.1 mm thick (for Neubauer counting chamber)	6 dozen
17.	RBC pipette	20 Nos.
18.	Pasteur pipette	3 dozen
19.	Microslides glass slides 3" x 1"	60 gross
20.	Glass funnel 4" diameter	5 Nos.
21.	Test Tube 4" x 1/3" size	5 Nos.
22.	Pipettes 10 ml capacity graduated	10 dozen
23.	Pipettes 5 ml capacity graduated	15 Nos.
24.	Pipettes 1 ml capacity	15 Nos.
25.	Wintrobe's tube and stands	15 Nos.
26.	Westergren Tubes and stands	1 dozen
27.	Pasteur Pipette with long beak	3 dozen
28.	Syringe 5 ml capacity disposable	1 box
29.	Syringe 2 ml capacity disposable	1 box
30.	Tiles (perspex sheet)	10 Nos.

Sr. No.	Item	Quantity
31.	Needles (hypodermic) 20, 21, 23 gauge	3 dozen
32.	Micro Auto pipettes fixed vol. 10 micro litre	2 Nos.
33.	Micro Auto pipettes fixed vol. 20 micro litre	4 Nos.
34.	Micro Auto pipettes fixed vol. 50 micro litre	4 Nos.
35.	Micro Auto pipettes fixed vol. 100 micro litre	4 Nos.
36.	Micro Auto pipettes fixed vol. 1000 micro litre	2 Nos.
37.	Sample Collection bottles 5 ml capacity (Plastic) disposable and screw cap	1000
38.	Torniquet	2 dozen
39.	Refrigerator 265 litre	1 No.
40.	Analytical Balance	2 Nos.
51.	Centrifuge Remi (RC 8) swing out for 8 tube	2 Nos.
52.	Empty glass vials 5 ml capacity c rubber bung	1000 Nos.
53.	Glass tubes 75 mm x 10 mm	200 Nos.
54.	Thermometer for wall	2 Nos.
55.	Plastic Beakers 2 lit capacity	6 Nos.
56.	Plastic beakers 1 lit capacity	6 Nos.
57.	Pipette stand	2 Nos.
58.	Test tube rack of 40 tubes	6 Nos.
59.	Plastic stain rack	4 Nos.
60.	Potassium hypochlorite solution for disposable of infective laboratory samples 10 lit	10 litre
61.	Hot air Oven 18" x 18" 18"	1 No.
62.	Table Lamp	2 Nos.
63.	Brilliant cresyl blue (Mack) or BDH	25 grams.
64.	Disposable lancets	200 Nos.
65.	Conical test tube graduated to 5 ml	1 dozen
66.	Measuring cylinder 100 ml capacity	5 Nos.
67.	Measuring cylinder 250 ml capacity	3 Nos.
68.	Beaker 50 ml capacity	6 Nos.
69.	Beaker 100 ml capacity	5 Nos..
70.	Glass rod (solid)	100 grams.
71.	Prespex sheet	100 grams.
72.	Glass marking pencil	5 dozen.
73.	Nicrome wire for cleaning haematology pipete	250 grams.
REQUIREMENT OF RAW MATERIALS FOR HAEMATOLOGY LABORATORY		
1.	Hydraulic Acid	2.5 litre
2.	Acetone	2.5 litre
3.	Cotton absorbant	30 rolls
4.	Drabkin's solution	25 litre
5.	Acetic acid	2.5 litre
6.	Gentian violet	5 grams.

Sr. No.	Item	Quantity
7.	Tri sodium citrate	500 grams.
8.	Artery forcep	2 Nos.
9.	Scissors	2 pairs
10.	Gas cylinder with stove and regulator	1 set
11.	Microscopelamp	15 Nos.
12.	Methylene blue	5 grams.
13.	Potassium Dichromate	500 grams.
14.	Hydro sulphuric acid	2.5 litre.
15.	Amonium Oxalate	500 grams.
16.	Formaldehyde	1 lit.
17.	Sodium chloride (Analar)	500 grams.
18.	All glass distillation apparatus 5 lit capacity	1 No.
19.	Hot plate	1 No.
20.	Holder for disposal lancet	5 Nos.
21.	Haemato crit centrifuge (micro)	1 No.
22.	pH meter	1 No.
23.	Glass beads	500 grams.
24.	Whatman Filter Paper No. 1	2 Packets
25.	Capillary tubes – plain	2 Packets
26.	Capillary tubes – heparinised	1 Gross
27.	Plasticine	6 Packets
28.	Stop Watch	5 Nos.
29.	Leishman stain powder	100 grams
30.	Liquid Paraffin	500 grams.
31.	Xylene	1 litre
32.	Methyl alcohol (acetone Free)	10 litre
33.	EDTA	100 grams
34.	PT and PTTK Kits (Tulip) PT 3 ml each PTTK 5 ml each	20 Nos. 16 Nos.
35.	Wash bottles Plastic 500 ml capacity)	12 Nos.

REQUIREMENT OF EQUIPMENT FOR HISTOPATHOLOGY LABORATORY

1.	Hot air oven	2 Nos.
2.	Moulds (Leukart's) assorted	15 pairs
3.	Incubators for paraffin wax (37 – 100° C)	1 No.
4.	Diamond Pencils	15
5.	Automatic Tissue Processor	1 No.
6.	Microtome knives/disposable blades	15 each
7.	Block holders	1 dozen each
8.	Scalpels/Blades	2 dozen
9.	Dissecting needles	2 dozen
10.	Rotary microtomes	6
11.	Tissue floatation bath	6

Sr. No.	Item	Quantity
12.	Hones (Belgium and plate glass)	15 Nos. each
13.	Automatic knife sharpner	1 No.
14.	Strop horse (leather)	15 Nos. each
15.	Microscopes Monocular (with 10 x 40 x 100) and with H2 immersion objective	15 Nos.
16.	Binocular	5 Nos.
17.	Refrigerator – Queen size (165 Lt)	1 No.
18.	Slide warmer (upto 100 C) (Cu-plate) rectangular	1 No.
19.	Bone cutter	2 Nos.
20.	Brain saw	1 No.
21.	Centrifuge (8 tubes) – Remi; Max speed: 5000 rpm	
22.	Magnetic rotator	1
23.	Freezing Microtome (with gas cylinder) Cryostat	1
24.	Tissue Embedding center	1
25.	Thermometer (0 to 110 C)	15 Nos.
26.	Chemical balance	1 each
27.	Timer	15
28.	Gas stove	1
29.	Bunsen burners	15 Nos.
30.	Metal racks (Assorted)	15 Nos.
31.	Slide Cabinets (Steel) 10 draws (100 slides each)	1 No.
32.	Slide Boxes; Wooden	15 Nos.
33.	Wax Block Cabinets (Card board boxes)	1 No.
34.	Scissor (assorted)	30
35.	Forceps (blunt)	30
36.	Forceps (9", 6") pointed)	15
37.	Forceps (toothed)	15
38.	Tissue capsules (small and medium) or cassettes	1 dozen each
39.	Enamel tray with and without lids (assorted)	10 Nos.
40.	Camel brushes	30 Nos.
41.	Microscopic lamp	15 Nos.
42.	Wooden slide stands	15 pair
43.	Disposable gloves	4 Packets
44.	Distillation plant	1 No.
45.	Slide Hanger (al, steel) for 15 slides	10 Nos.
46.	Weight Box	2
47.	Fractional weights	6
48.	Stand for pipettes	15
49.	Bread Knives	2 Nos.
REQUIREMENT OF RAW MATERIAL FOR HISTOPATHOLOGY LABORATORY		
1.	37 – 40% Formaldehyde	30 litre

Sr. No.	Item	Quantity
2.	Acetone	10 litre
3.	Benzene	10 litre
4.	Chloroform	5 litre
5.	Absolute alcohol and methyl alcohol	10 litre each
6.	Xylene	18 litre
7.	Paraffin Wax	30 Kg
8.	Liquid paraffin	2 litre
9.	Magnesium Sulphate	500 grams
10.	Abrasive Powder (coarse, medium, line)	600 grams each
11.	DPX	1 litre
12.	Canada Balsam	500 ml
13.	Haematoxylin Powder	100 gram
14.	Ferric chloride	300 gram
15.	Hydrochloric Acid (HCl)	20 litre
16.	Picric acid	500 grams.
17.	Acid Fuchsin	25 grams.
18.	Potassium iodide	500 grams.
19.	Iodine crystals	100 grams.
20.	Phosphotungtic acid	25 grams.
21.	Potassium Permanganete	500 grams.
22.	Oxalic Acid	500 grams.
23.	Potassium Ferrocyanide	100 grams.
24.	Silver Nitrate	100 grams.
25.	Eosin Y	50 grams
26.	Potassium aluminium sulphate	2 Kg.
27.	Mercuric oxide	25 grams.
28.	Ammonia Solution	500 ml.
29.	Lithium Carbonate	500 grams.
30.	Glycerine	4 litre
31.	Sodium iodate	25 grams.
32.	Periodic acid	25 grams
33.	Basic fuchsin BDH (Gurr)	100 grams
34.	Sodium metabisulphite, potassium metabisulphite	500 grams each
35.	Charcoal (activated)	500 grams
36.	Giemsa Powder	25 grams
37.	Lightgreen (SF Yellosisn)	25 grams.
38.	Sulphuric Acid	2 litre
39.	Ferric ammonium sulphate	500 grams.
40.	Sodium Hydroxide	500 grams.
41.	Sodium Bicarbonate	500 grams.
42.	Sodium Chloride	2 kg.
43.	Sodium thiosulphate	500 grams
44.	Methyl violet	25 grams
45.	Crystal violet	25 grams

Sr. No.	Item	Quantity
46.	Carbolic acid	100 grams
47.	Methylene blue	25 grams
48.	Formic acid	2 litre
49.	Sodium citrate	500 grams
50.	Nitric Acid	10 litre
51.	Bismark brown	25 grams
52.	Orange G – 6	25 grams
53.	Ether (element)	1 litre
54.	Malachite green	25 gram
55.	Sudan black, II, III, and TV	25 grams each
56.	Isopropyl alcohol	30 litre
57.	Phloxine	50 grams
58.	Acetic acid, glacial	1 litre
59.	Borax	500 grams
60.	Phenol	500 grams
61.	Celloidin	5 gram
62.	May Gruwald stain	25 grams
63.	Starch adhesive	100 grams
64.	Calcium carbonate	500 grams
65.	Potassium dichromate	500 grams
66.	Mercuric chloride	100 grams
67.	Ammonium aluminium sulphate	500 grams
68.	Aluminium chloride, anhydrous	100 grams
69.	Potassium Chloride	500 grams
70.	Potassium carbonate	500 grams
71.	Sodium acetate	500 grams
72.	Chromium tetraoxide	100 gram
73.	Sodium bisulphite	100 gram
74.	Sodium Bicarbonate, sodium chloride	500 grams each
75.	Ferric oxide AR	500 grams
76.	Aluminium Oxide AR	500 grams
77.	Alcian blue W/S	25 grams
78.	Oil Red O	25 grams
79.	Scarlet B	25 grams
80.	Carmin	25 grams
81.	Ponceau 2 R	25 grams
82.	Biesrich Scarlet red (WS)	25 grams
83.	Aluminium sulphate	500 grams
84.	Aniline blue	25 grams
85.	Dettol	500 ml
86.	Rankle	5 litre
87.	Eosin – azure (EA) 36 or 50	25 grams
88.	Gelatin	100 grams
89.	Copper Sulphate anhydrous	500 grams

Sr. No.	Item	Quantity
90.	Tannic acid	25 grams
91.	Thymol	100 gram
92.	Cotton (absorbant)	2 ponds
93.	Gauge piece (cloth)	30 meter
94.	Whatman filter paper No. 1	20 packets
GLASS WARES (ANNUAL REQUIREMENT) HISTOPATHOLOGY LABORATORY		
1.	Staining jar (rectangular) with lids 30 slides, 10 slides	4 dozen each
2.	Coplin jars with lids 10 slides 75 x 75 mm	2 dozen
3.	Slides (Micro)	18 gross
4.	Covers lips (22 x 22mm, 22 x 50 mm)	20 oz
5.	Test tubes 6 x 2/3"	4 Nos.
6.	Cylinder 4" (1 litre, 500 ml, 250 ml, 100 ml)	4 Nos. each
7.	Flask Conical (1 litre, 500 ml, 250 ml, 100 ml)	6 Nos, each
8.	Beakers (1 litre, 500 ml, 250 ml, 100 ml)	6 Nos. each
9.	Dropper with rubber feats	12 Nos.
10.	Pipettes (10 ml, 5 ml, 2ml, 1 ml, 0.1 ml)	2 dozen each
11.	Glass funnels (3", 4", 6")	6 Nos. each
12.	Specimiars (small and large size)	1 dozen each
13.	Wide mouth bottles	4 oz
14.	Specimen bottles with bakelite lid	2 oz
15.	Reagent bottle – white/brown	2 dozen each
16.	Dropping bottles (medium)	2 dozen
17.	Museum jar lids 12" x 6" x 3"	12 dozen
18.	Museum jars 9" x 6" x 3" with lids	2 dozen
19.	Wash bottle	12 Nos.
RAW MATERIAL FOR BIOCHEMISTRY LABORATORY		
20.	Sodium Chloride	500 grams.
21.	Starch (soluble)	250 grams
22.	Picric Acid	250 grams
23.	Citric Acid	500 grams
24.	Creatinine	10 grams
25.	Potassium Permangnate	250 grams
26.	Ammonium oxalate	250 grams
27.	Potassium Chloride	250 grams
28.	Oxalic acid	250 grams
29.	Trichloroacetic acid	500 grams
30.	L-Ascorbic acid	10 grams
31.	Monopotassium dihydrogen phosphate	250 grams
32.	Chloroform	1 litre
33.	Pepsin	10 gram

Sr. No.	Item	Quantity
34.	Benzidine	100 grams
35.	Hydrogen Peroxide	500 ml
36.	Silver Nitrate	25 grams
37.	Potassium bichromate	100 grams
38.	Sodium Glycero phosphate	100 grams
39.	Dipotassium monohydrogen phosphate	250 grams
40.	2:4 dinitrophenyldrazine	100 grams
41.	L-Ketoglutaric acid	5 gram
42.	Sodium pyruvate	25 gram
43.	DL-Aspartic acid	100 gram
44.	DL Alanine	100 gram
45.	Sodium citrate	500 gram
46.	Sulphur powder	100 gram
47.	Iodine (solid)	100 gram
48.	Ethylene Glycol	500 gram
49.	Sodium nitopruesside	100 gram
50.	Nitric Acid (conc)	1 litre
51.	Rectified Spritit (alcohol)	8.5 litre
52.	Acetone	2 litre
53.	Potassium iodide	100 gram
54.	Pheny hydrazine hydrochloride	100 gram
55.	Bromophenol blue	25 gram
56.	Ammonia	3.5 litre
57.	BCG	5 gram
58.	Ammonium sulphate	1000 gram
59.	Cholesterol (AR)	100 gram
60.	Glacial acetic acid	2 litre
61.	Cresol Phthalein complexone	1 gram
62.	Capryl alcohol	500 litre
63.	Saponin	1 bottle
64.	Glycerine	100 ml
65.	Tris buffer	1 litre
66.	Silica	100 gram
67.	Carbon tetrachloride	500 ml
68.	Toluene	500 ml
69.	Benzene	500 ml
70.	Phenol	250 gram
71.	Diphenyl carbazone	5 gram
72.	Mercuric nitrate	100 gram
73.	Ethylene diamine dihydrochloride	100 gram
74.	Isobutanol	500 ml
75.	Sodium hydroxide	1 Kg
76.	Potassium Hydroxide	250 gram
77.	Methylene chloride	500 ml

Sr. No.	Item	Quantity
78.	Xylene	500 ml
79.	Rubber Gloves	10 pairs
80.	Laboratory Aprons	2 No.
81.	Match Box	2 dozen
82.	Liquid detergent	10 litre
83.	Enamel tray (big)	6 No.
84.	Gum Paper	2 big rolls
85.	Filterpaper (Whatman No. 1) round small	10 packets
86.	Whatman No. 1 Chromatographic Paper	5 sheets
87.	pH paper BDH pH paper 0 – 14 different range	2 No. each
88.	Trough (Plastic) 10 – 15 litre	4 No.
89.	Permanent glass marker	6 No

REQUIREMENT OF CHEMICALS IN BIOCHEMISTRY LABORATORY

1.	Ammonium molybdate	250 gram
2.	Calcium carbonate	100 gram
3.	Sodium tungstate	500 gram
4.	Sodium sulphate	250 gram
5.	Copper sulphate	500 gram
6.	Sodium carbonate	500 gram
7.	Sodium bicarbonate	500 gram
8.	Sodium potassium tartrate	500 gram
9.	Molybdic acid	300 gram
10.	Orthophosphoric acid	1 litre
11.	D-Glucose (AR)	100 gram
12.	Benzoic acid	100 gram
13.	Uric acid	5 gram
14.	Lithium carbonate	100 gram
15.	Formaldehyde	500 ml
16.	Lithium sulphate monohydrate	250 gram
17.	Bovine serum Albumin solid	10 gram
18.	Succinic acid	100 gram
19.	Di-sodium hydrogenphosphate	250 gram
20.	Ferric chloride	250 gram
21.	Urea	500 gram
22.	Diacetyl monoxime	100 gram
23.	Thiosemicarbazide	25 gram
24.	Phenyl mercuric acetate	25 gram
25.	Cobalt sulphate	250 gram
26.	Sulphanilic acid	100 gram
27.	Sodium nitrite	100 gram
28.	Methanol	1 litre
29.	Bilirubin	1 hgm

Sr. No.	Item	Quantity
30.	Topfer's reagent	200 ml
31.	p-Dimethylaminobenzaldehyde	100 gram
32.	Calcium chloride	100 gram
33.	Sodium fluoride	250 gram
34.	Potassium oxalate	750 gram
35.	Lipid profile kit	1 pkt
36.	Heparin	5 vials
37.	Uristix (strip for urine analysis) Single test	2 pkt
38.	Uristix (strip for urine analysis) Multi tests	1 pkt
39.	Kits for all biochemistry Test available in the market	1 kit each

Note:

As the technique/method of biochemical analysis are ever changing, there must be some flexibility to procure the necessary item as and when the existing method is replaced by a newer one

41.	Dinitrosalicylic acid	100 gm
42.	Ninhydrin	100 gm
43.	Propanol	500 ml
44.	Butanol	500 ml

MISCELLANEOUS ITEMS

1	Cotton (absorbent)	5x550 gm
2.	Tissue Paper	5 packets
3.	Weight Box	2 No.
4.	Fractional weight	2 No.
5.	Savlon Bottle	1 big size
6.	Lifebuoy soap	2
7.	Filter Papers	1 rim

REQUIREMENT OF EQUIPMENT (BIOCHEMISTRY)

1.	Centrifuge	3
2.	Photoelectric colorimeter	3
3.	Water bath electric (Boiling water)	1
4.	Constant Temperature Water bath, with thermostatic control	1
5.	Incubator 37° C	1
6.	Hot air oven	1
7.	Flame photometer	1
8.	Horizontal inverted v type electrophoretic apparatus	1
9.	Complete equipment for the thin layer chromatography	1
10.	Provision of gas in lab	2 Cylinders
11.	Hair drier	1
12.	Glass plates	2

Sr. No.	Item	Quantity
13.	Sprayer	5
14.	Bell jar	5
15.	Vacuum dessicator	1
16.	Balance l analytical	1
17.	Balance electrical one pan	1
18.	Stop Watch	1
19.	Urinometer	3
20.	tripod stand (metal)	5
21.	Test Tube Holder	3 dozen
22.	Reflux condenser	2
23.	Separating funnel	2
24.	Distillation plant	2
25.	TLC plate	10
26.	Refrigerator (300 litre)	1
27.	Autopipette adjustable upto 0.5 ml	2 dozen
28.	Auto pipette adjustable upto 5.0 ml	2 dozen
29.	Pipette controller serological	2 dozen
30.	Deioniser	1
31.	Syringe sterilizer	1
32.	Stools (Wooden Revolving)	30
33.	Wire gauze	10
34.	Racks (wooden)	4
35.	Cabinet for pipettes	4
36.	Examination Table (Wooden)	1
37.	Pipette stand	10
38.	Test Tube stand (PVC)	3 dozen.
39.	Cleaning Brushes (big)	24 No
40.	Cleaning Brushes (small)	24 No
41.	Wash bottles (polythene)	2 dozen
42.	Spatula	10 No
43.	Spectrophotometer	1 No
44.	pH meter	1 No.
45.	Glucometer	1 No
GLASS WARES ANNUAL REQUIREMENT (BIOCHEMISTRY LABORATORY)		
1	Blood collecting bottles	1 gross
2	Syringe (10 ml) disposable	4 dozen
3	Syringe (5 ml) disposable	4 dozen
4	Needle (No. 19 – 20 – 21 and 22)	1 doz. Each
5	Centrifuge tube (5 ml) glass	1 gross
6	Centrifuge tube stoppered 15 ml for cholestoral	2 dozen
7	Pipette (10 ml) serological blow out	4 dozen
8	Pipette (5 ml) serological blow out	4 dozen

Sr. No.	Item	Quantity
9	Pipette (2 ml) serological blow out	5 dozen
10	Pipette (0.1 ml) serological blow out	6 dozen.
11	Pipette (.2 ml) serological blow out (sero)	6 dozen.
12	Beaker 250 ml	2 dozen
13	Beaker 100 ml	1 dozen
14.	Measuring cylinder 1 litre and 500 ml	4 No. each
15.	Measuring cylinder 1 litre and 250 ml	4 No. each
16.	Measuring cylinder 1 litre and 100 ml	4 No. each
17.	Volumetric Flask 500 ml	½ dozen
18.	Volumetric Flask 100 ml	6 dozen
19.	Volumetric Flask 50 ml	6 dozen
20.	Conical flask 100 ml	1 dozen
21.	Pasteur pipettes	2 dozen.
22.	Test Tube (big 6" x ¾")	2 gross
23.	Test Tube (small 4" x ¾")	4 gross
24.	Reagent bottles wide mouth 1	4 dozen.
25.	Reagent bottles 100 ml	3 dozen.
26.	Reagent bottles 250 ml	3 dozen.
27.	Reagent bottles 500 ml	2 dozen.
28.	Reagent bottles brown coloured 500 ml	1 dozen.
29.	China dish	30 No
30.	Copper mug	4 No
31.	Centrifuge tube (polythene)	4 No
32.	Glass slides	1 gross
33.	Cover slips	2 gross
34.	Glass rod	4 ounces
35.	Funnel (medium)	2 dozen.
36.	Rubber bulbs for pipettes 1 and 2 ml	50 No each
37.	Rubber bulbs for pipettes 5 ml	50 No
38.	Rubber bubs for pipettes 10 ml	50 No
39.	Glass tube and blowing	2 Kg
CHEMICAL REAGENTS MICROBIOLOGY, PARASITOLOGY AND SEROLOGY		
Antibiotic Discs (Commercial)		
1.	Ciprofloxacin	2 vials
2.	Chloramphenicol	2 vials
3.	Tetracyclin	2 vials
4.	Erythromycin	2 vials
5.	Pencillin	2 vials
6.	Gentamicin	2 vials
7.	Nitroforansoin	2 vials
8.	Septran	2 vials

Sr. No.	Item	Quantity
9.	Nalidinic acid	2 vials
10.	Nor floxacin	2 vials
11.	Carbohydrate discs	2 vials
Acids		
12.	Lactic acid	250 ml
13.	Acetic acid(Glacial)	500 ml
14.	Conc. Sulphuric acid AR	4 litres
15.	Conc. Nitric Acid AR	1 litre
16.	Conc. Hydrochloric Acid AR	2 litres
17.	Ascorbic acid	250 grams
18.	Citric acid	250 grams
Kits (Commercial)		
1.	Widal Test kit	2 No
2.	Pregnancy Test Kit	2 No
3.	RA Test Kit	2 No
4.	VDRL Kit	2 No
5.	ASO	2 No
6.	CRP	2 No.
7.	HbsAg (strips)	As required
8.	HIV Tridot test cards	As required
Stains and Reagents		
1.	Gention violet	50 grams
2.	Safranin	50 grams
3.	Basic fuchsin	50 grams
4.	Acid fuchsin	10 grams
5.	Malachite green	50 grams
6.	Methylene blue	50 grams
7.	Methyl red	25 grams
8.	Phenol red	25 grams
9.	Neutral red	25 grams
10.	Bromothymol blue	25 grams
11.	Bromocresol purple	25 grams
12.	Phenolphathelein	25 grams
13.	Brilliant green	25 grams
14.	BDH (Universal indicator)	25 grams
15.	Bromophenol blue	25 grams
16.	Toluidine blue	25 grams
17.	Crystal violet	25 grams
18.	LCB Stain	125 ml
19.	Sudan black	35 grams

Sr. No.	Item	Quantity
20.	Eosin	25 grams
21.	Cresol red	25 grams
22.	Indian Ink	2 vials
23.	Creatinine Powder	10 grams
24.	JSB, Cuemsa, Leishman stain for MP	10 grams each
Organic Solvents		
1.	Absolute alcohol	2 litres
2.	Ethyl alcohol	2 litres
3.	Acetone	10 litres
4.	Chloroform	1 litres
5.	Ether	1 litres
6.	Amyl alcohol	500 ml
7.	Isoamyl alcohol	250 ml
8.	Butanol	500 ml
9.	Phenol (crystal)	500 gm
10.	Thymol	100 gm
11.	Cresol with soap sol (1 litre)/Lysol	15 bottles
12.	Glycerin	250 ml
13.	Methyl alcohol	5 litre
14.	Xylene	500 ml
15.	Glycerol mono acetate	25 grams
16.	P-Dimethylamino benzaldehyde	25 grams
17.	Tetra methyl p phenylene diamine dihydrochloride	25 grams
18.	Alpha- naphthal	25 grams
19.	Tween 80 (Polyoxyethylene sorbiton monooleate)	25grams
20.	Cedar Wood oil/liquid paraffin	500 ml
21.	Starch	250 grams
22.	Creatinine	100 grams
23.	Urea	50 grams
24.	Optochin	25x1 vial
25.	Bacitracin	25x1 vial
Inorganic Salts		
1.	Sodium Chloride	500 grams
2.	Sodium Hydroxide	500 grams
3.	Sodium sulphate	500 grams
4.	Na-citrate	100 grms.
5.	Disodium Orthohydrogen Phosphate	250 grams
6.	Sodium dihydrogen Phosphate	250 grams
7.	Sodium acid selenite	250 grams
8.	Sodium tauro cholate (60 %)	250 grams
9.	Na ₂ CO ₃	500 grams
10.	Na HCO ₃	500 grams

Sr. No.	Item	Quantity
11.	Na acetate	250 grams
12.	Na- thioglycollate	250 grams
13.	Na NO ₃	250 grams
14.	Resazurin – sodium	25 grams
15.	Na-glycero Phosphate	25 grams
16.	Potassium dichromate	1 Kg
17.	Potassium Iodide	500 grams
18.	Dipotassium hydrogen phosphate	250 grams
19.	KOH	250 grams
20.	K-tellurite	25 grams
21.	Iodine	500 grams
22.	Ferric ammonium citrate	500 grams
23.	Amonia solution	500 grams
24.	Glucose	100 grams
25.	Lactose	100 grams
26.	Mannitol	100 grams
27.	Sucrose	100 grams
28.	Hydrogen peroxide	500 grams
Culture Media (Commercial)		
1.	TSB	100 grams
2.	Peptone water	250 grams
3.	PDA (Potato Dextrose Agar)	100 grams
4.	SDA media	100 grams
5.	Citrate media	100 grams
6.	Urea Broth	100 ml
7.	Maconkey media	500 grams
8.	DCA Agar	100 grams
9.	Agar	2 Kg
10.	Nutrient agar	250 grams
11.	Mullar Hinton agar	250 grams
12.	Nutrient Broth	100 grams
13.	Glucose broth	250 grams
16.	XLD	100 grams
17.	Downi's media	100 grams
<p>N.B: Any addition should be made as and when required While ordering commercial reagents keep in mind the individual requirements</p>		
CONSUMABLE ITEMS (MICROBIOLOGY, PARASITOLOGY AND SEROLOGY)		
1.	Nichrome wire 28/27 swg.	10 metres
2.	Wire gauze	50 pc

Sr. No.	Item	Quantity
3.	Plasticin	4 pkt of 5
4.	Sticking plaster (Leukoplast)	2 – 3 rolls
5.	Gum Paper	2 – 3 rolls
6.	Cotton (Absorbant)	5 – 6 rolls
7.	Cotton (non-absorbant)	5-6 rolls
8.	Filter paper What mann-42	6 packets
9.	Coarse filter paper	100 sheets
10.	Tissue paper for microscope	20 rolls
11.	Aluminium foils	6 rolls
12.	pH paper (Universal range)	12 pkt
13.	Brown paper	2-3 doz.
14.	Rubber teats	10-15 pcs
15.	Rubber tubing	5 meters
16.	Rubber gloves (disposable)	25x5 boxes
17.	Cleaning brushes (small)	25 pcs
18.	Cleaning brushes (Big)	25 pcs
19.	Plastic wash bottle	12 x 2 boxes
20.	Thread (reel)	2 doz.
21.	Glass marking pencil /Permanent marker	4 dozen/1 dozen
22.	Glass lighter	4 No.
23.	Aluminium rack 4 x 12 holes	10
24.	Loop holders	24
25.	PVC test tubes rack (Assorted size)	20
26.	Pipette Stands	20
27.	Tripol stand	10
28.	Spatula	10
29.	Dessicator	2
30.	Stop watch	2
31.	Perforated Aluminium Basket (Big)	10
32.	Perforated Aluminium Basket (Medium)	10
33.	Perforated Aluminium Basket (Small)	10
34.	Waste Paper basket	5
35.	Slide box (100 slides)	5
36.	Jug with lid	2
37.	Time	2
EQUIPMENT		
1.	Binocular optical microscopes with 100x and 40 x extra objectives	1/10 students
2.	Projection microscope	1No.
3.	Microscope with dark field condenser	1
4.	Autoclave (vertical)	2
5.	Hot air oven	1
6.	Water bath	1

Sr. No.	Item	Quantity
7.	Gas Plant (LPG) with mutlibead)	1
8.	Vacuum pump	1
9.	Anaerobic jar	1
10.	Colony counter	1
11.	Anaerobic gas pack	1
12.	VDRL shaker (for VDRL test)	1
13.	Inspissator	1
14.	Biological safety cabinet	1
15.	Incubator	2
16.	Autopipette 10 ul, 100 ul,	2 each
17.	pH meter (electronic)	1
18.	Bunsen Burner	12
19.	Physical Balance 2 – pan balance	1
20.	Chemical balance (electronic/digital)	1
21.	Single Pan balance	1
22.	Membrane filter (metal)	1
23.	Centrifuge machine (medium)	2
24.	Distilled water plant (steel glass)	1
25.	Magnetic stirrer with heater	1
26.	Vortex Mixer	1

GLASS WARE/PLASTIC WARE (CONSUMABLE) FOR BACTERIOLOGY PARASITOLOGY AND SEROLOGY LABORATORY

1.	Beaker 2 litre	5 pcs
2.	Beaker 1 litre	10 pcs
3.	Beaker 500 ml	10 pcs
4.	Beaker 250 ml	12 pcs
5.	Beaker 100 ml	12 pcs
6.	Beaker 50 ml	15 pcs
7.	Conical Flask 3 litre	3 pcs
8.	Conical Flask 1 litre	12 pcs
9.	Conical Flask 500 ml	24 pcs
10.	Conical Flask 250 ml	24 pcs
11.	Conical Flask 100 ml	12 pcs
12.	Conical Flask 50 ml	12 pcs
13.	Measuring Cylinder 1 lite	5 pcs
14.	Measuring Cylinder 500 ml	10 pcs
15.	Measuring Cylinder 250 ml	10 pcs
16.	Measuring Cylinder 100 ml	10 pcs
17.	Measuring Cylinder 50 ml	10 pcs
18.	Measuring Cylinder 10 ml	5 pcs
19.	Graduated pipelte 10 ml	20
20.	Graduated pipelte 5 ml	20

Sr. No.	Item	Quantity
21.	Graduated pipette 2 ml	20
22.	Graduated pipette 1 ml	20
23.	Test Tubes (6" x 1/2")	2 gross
24.	Test Tubes (4" x 1/2")	5 gross
25.	Test Tubes (8" x 1")	2 dozen
26.	Widal tube (75x10mm)	1 gross
27.	Durham's tube	2 gross
28.	Slides (glass)	24 gross
29.	Cover slips (24 mm x 24 mm)	40 pkt
30.	Blood Culture Bottles 100 ml	4 dozen
31.	Mackartney bottles 1/2 oz	4 dozen
32.	Mackartney bottles 1 oz	1/2 gross
33.	Mackartney bottles 4 oz	1/2 gross
34.	Reagents bottle with glass stoppers	4 dozen
35.	Reagents bottle with wide mouth	24 pcs
36.	Dropping bottle	4 dozen
37.	Glass tubing	10 kg
38.	Glass rods	10 kg
39.	Glass Funnel (Big)	1 dozen
40.	Glass Funnel (Medium)	1 dozen
41.	Glass Funnel (Small)	1 dozen
42.	Petridishes (Plastic disposable) (HI –MEDIA)	400
43.	Pasteur pipettes	50
44.	Disposable Syringes with needles 5 to 10 ml	2 dozen Each
45.	Centrifuge tubes (graduated) 10 ml	24 pcs
46.	Perspex trays	5 pcs
47.	Capillaries	1 pkt
48.	Cavity slides/VDRL	4-6 pcs
49.	Discarding jars for slides	5 pcs.
50.	Sharp containers (needle cutter)	2
51.	Pipette tips (disposable) small and large	2 pkts each

9.1.3 Furniture Requirement

Norms and standards laid down by AICTE be followed for working out furniture requirement for this course.

9.2 Human Resources Development:

Weekly work schedule, annual work schedule, student teacher ratio for various group and class size, staffing pattern, work load norms, qualifications, experience and job description of teaching staff workshop staff and other administrative and supporting staff be worked out as per norms and standards laid down by the AICTE

Sr. No.	Item	Quantity
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Following are the suggested qualifications and experience for the teaching faculty and technical staff

Qualification	Experience
<u>Lecturer</u> First class B.Sc. (Medical Laboratory Technology)	NIL
<u>Sr.Lecturer</u> First class B.Sc. (Medical Laboratory Technology) or equivalent	5 years experience in teaching/industry/ research at the level of Lecturer or equivalent
<u>Head of Department</u> M.Sc (Medical Laboratory Technology or equivalent with first class at Masters or Bachelor's level	5 years experience in teaching/industry/ research at the level of Lecturer or equivalent
<u>Note:</u> Candidates from industry/profession with First Class B.Sc (Medical Laboratory Technology) or equivalent and with recognized professional work experience equivalent to Master's degree and 5 years experience may also be eligible for the post of H.O.D.	
<u>Technician</u> 3 years diploma in Medical Laboratory Technology or equivalent	2 years practical experiences in teaching/ industry/research at appropriate level