

Instrumentation

Unit 1: Balances

Physical balance- chemical balance- electrical balance

Unit 2: Microscopes

Simple microscope- compound microscope- special microscope- dark ground microscope- phase contrast microscope - electron microscope.

Unit 3 : Centrifuges

Hand centrifuge – electrical centrifuges- ultra centrifuges

Unit 4 : Electrical Equipments

Hot air oven- incubator – water bath

Unit 5 : Calorimeter

Photo electric calorimeter- spectra photometer- flame photometer - semi auto analyzer

Unit 6 : Instruments for Special Investigations

Electrophoretic apparatus – chromatography apparatus

Unit 7 : Instruments used in Genetics

Polymerase Chain Reaction (PCR) apparatus

Unit 8 : Miscellaneous Apparatus

pH meter – osmometer- densitometer- distillation apparatus- deionizer – microtome.

Unit 9 : Automated Instruments

Fully automated analysers- histo kinet

Unit 10 : Immunological Instruments

ELISA reader – gamma counters

Text Book:

1. Praful. B. Godkar and Dardsan .P. Godkar-2003. 2nd Ed. Text book of Medical Laboratory Technology. Phalani Pub. House, Mumbai.

Reference:

1. Kannai. L. Mukerjee – 2002. Medical Laboratory Technology - vol. I, II & III, Mc Craw Hill Pub. New Delhi. Pp. 450.

Paper 2

Biochemistry

- Unit 1** : **Chemistry of Carbohydrates**
Classification - monosaccharide - disaccharides- polysaccharides
- Unit 2** : **Chemistry of Lipids**
Classification - simple lipids- compound lipids- derived lipids - steroids
- Unit 3** : **Chemistry of Protein**
Classification - simple protein - conjugated protein - amino acids- structure of proteins
- Unit 4** : **Chemistry of Nucleic Acid**
Bases - nucleotides - DNA - RNAs
- Unit 5** : **Enzymes**
Classification - mechanism of action - inhibitors - co enzymes - clinical enzymes
- Unit 6** : **Metabolism of Carbohydrates**
Glycolysis - HMP shunt - Gluconeogenesis - Glycogen - Disorders
- Unit 7** : **Metabolism of Lipids**
 β - Oxidation - ketones- phospholipids - cholesterol - Disorders
- Unit 8** : **Metabolism of Protein**
Urea synthesis - aromatic amino acids - inborn errors
- Unit 9** : **Haemoglobin**
Haemoglobin - Haemoglobin synthesis - breakdown - jaundice
- Unit 10** : **Acid Base Balance**
Buffers - acidosis - alkalosis

Text Books :

1 Praful. B. Godkar and Dardsan .P. Godkar- 2003. 2nd Ed. Text book of Medical Laboratory Technology. Phalani pub. House , Mumbai.

Reference:

1. Gupta, R.C. - 2003, Essential medical biochemistry. Academy pub. , New Delhi.
2. Deb, A.C. - Fundamentals of Biochemistry. 8th edn, new centre book agency, Calcutta
3. Sathyanarayanae, U. - 2006, Essentials of Biochemistry, 3rd Edn, Books allied publishers, Calcutta.

Paper 3

Microbiology

- Unit 1 : Sterilization and Disinfection**
Dry sterilization – wet sterilization – various disinfectant
- Unit 2 : Media for Microorganisms**
Simple media – enriched media – special media
- Unit 3 : Classification, Culture and Sensitivity of Microorganisms**
Cocci – bacilli – spirochaetes – viruses
- Unit 4 : Staining**
Simple staining – special staining
- Unit 5 : Mycology**
Classification – culture – identification
- Unit 6 : Virology**
Classification – culture – identification
- Unit 7 : Parasites**
Unicellular – multi cellular – identification
- Unit 8 : Serology**
Flocculation test – agglutination test – complement test – immuno fluorescence test.
- Unit 9 : Laboratory Animals**
Maintenance – experiments
- Unit 10 : Immunossays**
Enzyme linked immuno assay (ELISA) – Radio immuno asasay (RIA).

Unit 10 : Gastric Function

Specimen collection - analysis of acids - analysis of enzymes - disorders

Text Book:

1 Praful. B. Godkar and Dardsan .P. Godkar- 2003. 2nd Ed. Text book of Medical Laboratory Technology. Phalani pub. House, Mumbai.

Reference:

1. Robbins - Textbook of pathology.
2. Harsh Mohan - pathology.

Paper 4

Pathology

Unit 1: Haematology

Cell study - normal - abnormal

Unit 2: Anaemia

Types of anaemia

Unit 3 : Coagulation of Blood

Factors involved in coagulation - mechanism of coagulation - disorders

Unit 4 : Blood Banking

Blood groups - screening tests - storage

Unit 5: Body Fluids

Cerebro spinal fluid (CSF) - pleural fluid - ascitic fluid - urine - semen

Unit 6: Histopathology

Tissue processing - mounting - section cutting - staining

Unit 7: Cytology

Specimen collection - preparation of specimen - preparation of smear - fixation - identification.

Unit 8 : Museum

Preparation of specimens - preservation - labeling and arrangements.

Unit 9 : Blood Parasites

Malarial parasites - filarial parasites and other parasites.

Paper 5

Applied Laboratory Technology

Unit 1: Biochemical Test

Biochemical test for diabetes mellitus - blood glucose - glucose tolerance test - serum cholesterol level - lipid profile - urine analysis.

Unit 2 : Biochemical Test

Biochemical test for jaundice - serum bilirubin - enzyme study - Prothrombin time - serum protein urine analysis

Unit 3: Biochemical Test

Biochemical test for kidney - blood urea - serum creatinine - clearance test - protein analysis - urine analysis.

Unit 4: Biochemical Test for Cardiac Diseases

Enzyme study - lipid profile - Prothrombin time

Unit 5: Other Biochemical Tests

Uric acid - calcium - phosphorus - electrolytes - other enzymes - hormones

Unit 6: Identification of Microbes

Specimen collection - processing - culture - identification.

Unit 7: Serological Test

Microbial test - other tests

Unit 8: Haematological Test

Cell count - erythrocyte sedimentation rate (ESR) - Haemoglobin estimation - smear study.

Unit 9: Test Related With Cancer

Selection of tissues - processing - staining - identification.

Unit 10: Other Pathological Test

Urinary stone analysis - gall bladder stone analysis - examination of faeces.

Text Book:

1 Praful. B. Godkar and Dardsan .P. Godkar - 2003. 2nd Ed. Text book of Medical Laboratory Technology. Phalani pub. House, Mumbai.

Reference:

1. Kannai. L. Mukerjee - Medical Laboratory Technology - vol. I, II & III, 2002. 10th edn., Mc crow hill publishing house, New Delhi.
2. Monica Cheesbrough - Medical laboratory manual - vol. I & II.