

## A. Microbiology

### 1. Bacteriology

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- 1.1 General knowledge about Bacteriology
- 1.2 Morphology of Bacteria (size, shape)
- 1.3 Differentiation of bacteria (cocci, bacilli)
- 1.4 Sample collection (pus, urine, throat swab, sputum, blood)
- 1.5 Principle of Gram's stain, microscopic identification of Gram +ve and Gram -ve bacteria.
- 1.6 Staining- Use of different dye and its principle, method of preparation.
- 1.7 Mycobacteria- M. tuberculosis/M.leprae, sample collection , staining and recording result.
- 1.8 Preparation of sputum smear
- 1.9 Safety precaution and proper disposal of infected materials.
- 1.10 Culture media-General introduction to different type of culture media.
- 1.11 General introduction to sterilization- by dry heat, moist heat,
- 1.12 Cultural technique of blood, urine, sputum, throat swab.
- 1.13 Use of disinfectants-preparation of disinfectant solution.

### 2. Parasitology

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- 2.1 Introduction to parasitology,
- 2.2 Terms used in parasitology,
- 2.3 Classification of parasites
- 2.4 Helminthic parasites(Ascaris lumbricoides, Ancylostoma duodenale, Necator Americans, Trichiuris trichiura, Strongyloides stercoralis, Enterobius vermicularis, Taenia solium, Taenia saginata, Hymenolepis nana, life cycle, mode of transmission, laboratory diagnosis, prevention and control measures.
- 2.5 Protozoal parasites(Giardia lamblia, Entamoeba histolytica, Entamoeba coli, Balatidium coli, Trichomonas vaginalis, Trichomonas hominis) - life cycle, mode of transmission, laboratory diagnosis, prevention and control measures.
- 2.6 Dysentery (amoebic and bacillary dysentery).
- 2.7 Difference between of Entamoeba coli & Entamoeba histolytica
- 2.8 Laboratory procedure :
  - 2.8.1 Collection of sample.
  - 2.8.2 Preparation of reagents: normal saline solution, Iodine solution, 33% Zinc sulphate sol'n.
  - 2.8.3 Stool examination- routine and concentration method, interpretation of results.
  - 2.8.4 Occult blood test.
  - 2.8.5 Disposal of waste materials

## B. Haematology

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- 1 Composition of blood, plasma, serum and whole blood.
- 2 Collection of blood sample – finger prick, vein puncture, ear lobe prick.
- 3 Anticoagulants, types of anticoagulants, preparation of Anticoagulantvials.

- 4 Use of instruments – Sahli's haemoglobinometer, haemocytometers, diluting pipettes, Neubaur counting chamber, ESR tubes, importance of bulk dilution, preparation of blood diluting fluid.
- 5 Preparation of thin and thick blood smears.
- 6 Total WBC, RBC and platelet count.
- 7 Sources of error in blood count.
- 8 Differential WBC count.
- 9 ESR estimation (Wintrobe and Westergren method).
- 10 Haemoglobin estimation, preparation of standard curve.
- 11 Preparation of Drabkin's Solution.
- 12 Use of Sahli Haemoglobinometer
- 13 Preparation of N/10 HCL.
- 14 Performance of –BT,CT,
- 15 Staining procedure – Preparation and use of Wright's stain and its principle.
- 16 Blood parasites – Malaria, filaria,
- 17 Perform blood grouping
- 18 Sources of errors in above haematological tests.
- 19 Quality control in haematology.

### **C. Biochemistry**

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- 1 Basic chemistry- matter, substance, atom and molecules element, compound.
- 2 Solution- Preparation of normal sol'n,
- 3 Cleaning of glass-wares
- 4 Instrument : Colorimeter, , Centrifuge, Balance, Refrigerator
- 5 Law of colorimetry-Beer's and Lambert's law
- 6 Collection of specimen for biochemical tests
- 7 Estimation of B.glucose preparation of std. curve interpretation of results, source of errors.
- 8 Estimation of Blood Urea ,interpretation of result, source of errors.
- 9 Preparation of reagents for Glucose, Urea,
- 10 Estimation of S.amylase, and calculation of results.
- 11 CSF – Glucose, Protein, Cell count, Gram's stain, AFB stain

### **D. Miscellaneous**

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#### **1. Urinalysis**

- 1.1 Importance of urine analysis
- 1.2 Collection of specimen
- 1.3 Preservation of urine for routine & culture purpose.
- 1.4 Examination of urinary deposit
- 1.5 Urine albumin test by heat and acetic acid, SSA method & strip.
- 1.6 Urinary glucose test by Benedict's & strip methods.
- 1.7 Preparation of Benedict's reagents.

#### **2. Semen analysis**

- 2.1 Volume
- 2.2 Motility
- 2.3 Sperm count

### *3. Instrumentation*

- 3.1 Microscope- use of microscope, parts of microscope, handling of microscope.
- 3.2 Use of incubators, hot air oven, water bath, refrigerator, chemical balance, Colorimeter.
- 3.3 Basic knowledge of glass-wares (test tube, flask, measuring cylinder).

### *4. Immunology*

- 4.1 Perform VDR L and HIV tests.
- 4.2 Definition of precipitation, agglutination, flocculation.

### *5. Quality control in following tests*

- 5.1 Gram's stain, AFB microscopy
- 5.2 TC, DC, Hb, ESR
- 5.3 Blood sugar, Blood urea

### *6. Basic knowledge of Anatomy and Physiology*

- 6.1 Digestive system – pancreatic amylase, ptylin
- 6.2 Urinary system – kidney, bladder, ureter