|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | |  | | **SYLLABUS FOR BMLT Ist YEAR** | | |  | **PAPER-1**  **BIOCHEMISTRY** | | | |  | **BMLT- 101** | | | |  |  | | | |  |  | | | |  | 1. 1.Introduction to Medical technology ole of medical laboratory Technologists , Ethics, responsibility , Safety, Measures First Aid (accidents) | | | |  | 2. Cleaning and care of general laboratory glassware and equipment, preparation and storage of distilled water analytical balance, Preparation of reagents and standard solution, storage of chemicals. | | | |  | 1. Units of measurement, S.I Units, measurement, of volumetric apparatus (pipettes, flasks, cylinders) Cali of volumetric apparatus. | | | |  | 4.Radioisotopes and their use in Biochemistry , mole , molar and normal solution , pH, Buffer solutions , pH, and pH measurement, Osmosis , dialysis , surface tension | | | |  | |  | 5.Urine analysis (qualitative) for sugar, proteins bile pigments, ketone bodies, porpholinoge, faeoal of blood. | | | |  | 6.Collection and recording of biological specimen’s separation of serum plasma, preservation and disposal of biological samples material | | | |  | 7.Basic statistics (mean, SD, CV , normal distribution , Probability) | | | |  | 8.Normal or Reference range | | | | 9. Definition influencing factors, determination. | | | | 10. Volumetric analysis- Preparation of standard acid and base solution, chloride estimation. | | | |  |  | | | |  |  | | | |  |  | | | |  |  | | | |  |  | | | | | | |
|  | | | |
|  | **HAEMATOLOGY AND CLINICAL PATHOLOGY** | |
|  | **PAPER -2**  **BMLT-102** | |
|  |  | |
| 1.Introduction to hematology and laboratory Organization Lab. Safety and instrumentation. | |
| 2.Formation of blood | |
| 3.Composition and function of blood. | |
| 4.Various anticoagulation, their uses , mode of action and their merits and demerits. | |
| 5.Collection & preservation of blood for various haematological investigations. | |
| 6.Physiological variations in Hb , PCV, TLC and platelets. | |
| 7.Normal and absolute values in haematology. | |
| 8.Quality assurance in haematology. | |
|  |  | |
| 9.Haemaglobinometery, various methods of estimation of Hb errors involved and standardization of instrument for adaptation for Hb Estimation. | |
| 10.Romanowsky dyes, Preparation and staining procedures of blood smears. | |
| 11.Morphology of normal blood cells and their identification . | |
|  |
|  |  | |
| 12.Haemocrit value and macro and micromethods their merits and demerits. | |
| 13.Routine Examination of urine. | |
| 14.Examination of biological fluids such as CSF etc | |
| 15.Examination of semen | |
|  |  | |
|  |  | |
|  |  | |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **APPLIED HISTOLOGY** | | |
|  | **PAPER-3**  **BMLT-103** | | |
| **INTRODUCTION** |
|  |
| 1.Introduction of histopathology and laboratory organization | | |
| 2.Laboratory equipment uses and maintenance | | |
| 3.Laboratory hazards and safety precautions | | |  | |
| 4.Compound microscope - optical , magnification and maintenance . | | |
|  |  | | |
|  |  | | |
|  | **ANATOMY AND PHYSIOLOGY** | | |
|  |  | | |
| 1.The anatomic and physiological organization of human body and integrated physiology | | |
| 2.Cell organization and function | | |
| 3.Sketetal system , bones , joints and muscles | | |
| 4.Body fluids and their function. | | |
| 5.Blood morphology , Chemistry and function. | | |
| 6.Respiratory System | | |
| 7.Cardiovascular system | | |
| 8.Alimentary system , mechanism and physiology of digestion and absorption. | | |
| 9.Liver structure and function. | | |
| 10.Urinary system | | |
| 11.Male Gential system | | |
| 12.Female gential system | | |
| 13.Nervous system | | |
| 14.Spleen , lymph node and R.E system. | | |
| 15.Endocrine glamds and their functions. | | |
|  | | |
|  | **FUNDAMENTAL OF APPLIED HISTOLOGY:-** | | |
| 1.Reception , recording and labeling of histology | | |
| 2.Fixation and various fixatives | | |
| 3.Processing of histology tinnues for paraffine-embedding | | |
| 4.Embedding and embedding media | | |
| 5.Decalification various types their | | |
| 6.Microtomes - various types their working principle and maintenance | | |
| 7.Microtome Knives and Knife sharpening . | | |
| 8.Practical section cutting , cutting faults and remedies. | | |
| 9.Routine staining procedures, mounting and mounting media. | | |
| 10.Dye chemistry , theory and practice of staining . | | |
| 11.Solvants, mordents , accelerators and accenuators. | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
| **CYTOLOGY:** | | |
| 1. Introduction to exfloliative cytology with special emphasis on female gential tract. | |
| 2.Collection processing and staining of the cytologic specimen | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
|  | | |
| |  |  |  | | --- | --- | --- | |  |  | | |  | **MEDICAL MICROBIOLOGY** | | |  | **BMLT-104** | | |  | **PAPER-4** | | | 1.Introduction and brief history of microbiology. | | | 2.Safety measures in microbiology. | | | 3.General characterstics and classification of bacteria and fungi. | | | 4.Growth and nutrition of microbes . | | | 5.Care and maintenance of laboratory equipments. | | | 6.Care and handling of various microscopes - binocular , DGI, phase - contrast, fluorescence and electron microscopes. | | | 7.Principles and methods of sterilization. | | | 8.User and mode of action of antiseptics and disinfectants. | | | 9.Handling and cleaning of glassware apparatus . Decontamination and disposal of contaminated material . | | | 10.Preparation , uses and standardizatoion of culture media. | | | 11.Principle of staining methods and preparation of reagents. | | | 12.Aerobic and anaerobic culture methods. | | | 13.General characters and nature of antigens and antibodies. | | | 14.Principles of Antigen Antibody reactions | | | 15.Collection , transportation and processing of clinical samples for microbiology investigations. | | | 16.Principles and mode of action of antibiotics and chemotherapeutic agents for bacteria and fungi. | | | 17.Care and handli8ng of laboratory animals. | | | 18.Laboratory organization , management, recording of results and quality control in microbiology . | | | **Virology:** | | | 1.Introduction to medical Virology. | | | 2.Nomenclature and classification of viruses . | | | 3.General characteristics of viruse : physical , chemical and biologial properties. | | | 4.Collection , transport , processing and storage of sample for viral diagnosis. | | | Practical: | | | 1.Introduction to use of different laboratory instruments and their safety precautions. | | | 2.Collection , handlings and storage of sample for viral diagnosis. | | | 3.Washing, cleaning and sterilization of media and glassware in virology. | | | 4.Principles of biosafety hoods , use of pipettes , syringes and other virus contaminated instruments in the laboratory. | | | 5.Demonstration of preservation of viruses , viral antigens , infected biological materials and viruses . | | | **PARASITOLOGY: THEORY** | | | 1.Introduction to medical and safety | | | 2.Generals characters and classification of protozoa. | | | 3.Laboratory procedure collections , presrevation and processing of 4.samples for parasites stool/blood/fluids/tissue/biopsy. | | | 5.Morphology and life cycles of intestinal protocol, Amoeba -Giardia. | | | 6.Laboratory diagnosis of intestinal protozoa infection:-Amoeba- Giardia. | | | 7.Morphology and diagnosis of oral of - trichomonas vaginal flagellates - E.Gingivalia. | | | 8.Morphology and life cycle of Haemopro - malaria protozoa -parasite. | | | 9.Laboratory diagnosis of malarial infection. | | | 10.Genaral characters and classification of medical helminthology. | | | 11.Morphology and life cycles of Nematodes (Intestinal) - Ascaris – 12.Enterobious- Ancylostoma --Strongyloides. | | | 13.Laboratory diagnosis of intestinal Nematode infection. | | | **Practicals :** | | | 1.Introduction to operation of laboratory instruments and safety precautions | | | 2.Macroscopic examination of adult worms , cysts , tissues and processing of stood sample for routine examination. | | | 3.Concentration procedures for protozoa cysts and trophozoites | | | Concentration procedures for helminthic ova and cyst. | | | 4.Saline and I2 preparation for protozoa cysts and trophozoites | | | 5.Examination and identification of ova and cyst of parasite. | | |  | | |  |  | | |  |  | | |  |  | | |  |  | | |  |  | | |  |  | | |  |  | | |  |  | | |  |  | | | | |