Paramedical and Health Care (PHC)
Paper-I

Theory – 40
Practical - 60

Unit-1 Human Anatomy

- Introduction to Anatomy
  - Different parts of Human Body,
  - Anatomical position, Directional terms, Common anatomical places
  - Systemic and regional anatomy
- Histology
  - Typical animal cell-structure and functions
  - Tissues of the body classification and function
- Skeletal System
  - Bones of the skull, vertebral column, shoulder girdle, thoracie cage and pelvic girdle
  - Bones of the limbs
  - Joints and movements
- Muscular system
  - Types of muscles
  - Principle muscles of the body, tendons, fascias
- Nervous system
  - Central nervous system, Brain meninges, CSF, Spinal cord
  - Peripheral nervous system cranical, spinal nerves system, autonomic nervous system
  - Sympathetic and para sympatghetic
- Cardiovascular system
  - Heart
  - Blood Vessels
- Lymphatic and RE system, Spleen
- Respiratory system
  - Nose, Pharynix, Laryns, Tonsils
  - Trachea, Bronchi
  - Lungs and Pleura
- Alimentray System
  - Mouth and Oesophagus,
  - Stomach,
  - Pancreas, liver and gall bladder
  - Intestines, peritoneum
- Urinary system
  - Kidneys
  - Ureter, urinary bladder and uretnra
- Reproductive System
  - Male genital system
  - Female genital system and accessory ovgans

- Skin
- Special Senses
  - Eye and vision
  - Ears and hearing equilibrium
  - Taste, Smell, General Sensibility Viz. touch etc. surface anatomy
- Head and neck
  - Thorax(Heart and lungs) and abdomen (Stomach, Spleen liver, kidney and bladder)
  - Places and regions of abdomen and location of different organs in stomach
  - Surface marking of important blood vessels, nerves and muscles for injection

Unit-II Human Physiology

- Blood
  - Composition and general functions of blood
  - Description of blood cells- normal counts and functions steps of coagulation
  - Anticoagulants
  - Cerebrospinal fluid, formation, composition and function, Blood groups ABO and RH basis for classification, importance of blood groups, compositions and functions of lymph
- Respiratory System
  - Name and structures involved in respiration and their function. External and internal respiration
  - How inspiration expiration are brought about
  - Transport of O_2 and CO_2 in the blood
  - Definition of respiratory rate, Tidal volume, vital capacity
  - Hypoxia
- Excretory System
  - Functions of kidney
  - Nephron – functions of glomerulus and tubules, Composition of Urine, normal and abnormal
- Skin
  - Functions of skin
- Digestive Systems
  - Composition and functions of saliva, mastication and deglutition
  - Functions of stomach, composition of gastric juice, pancreatic juice
  - Bile and success enteritis
  - Digestion of food by different enzymes, absorption and defection
- Endocrine – glands
  - Definition of endocrine gland, name of the endocrine glands and the hormones secreted by them
  - Major actions of each hormone
  - Reproductive system
  - Name of primary and accessory organs in male and female
  - Name of secondary sexual characters in male and female

- Functions of ovary-formation of ova, actions of ovarian hormones, Menstrual cycle
- Function of Testis – Spermatogenesis and actions of Testosterone, Fertilisation
- Vasectomy and Tubectomy

Unit-III Laboratory Management and Ethics

- Role of laboratory in health care deliver
  - General
  - Human health and diseases
    - Types of diseases
    - Process of diagnosis
  - Laboratory at different level
  - Duties and responsibility of laboratory persons
- Laboratory services in the health delivery system
  - Laboratory service in India
  - The health administration system in India
    - At the National level
    - At the state level
    - At the district level
    - At the village level
    - Voluntary health organisations in India
    - Health programmes in India
- Laboratory Planning
  - General principles
  - Laboratory goals
  - Operational data
    - Market potential
    - Hospital/laboratory relatives
    - Competitions
    - Laboratory trends
  - Planning at different levels
  - Guiding principles for planning hospital laboratory services
    - Factors
    - Guiding principles for planning
    - Functions criteria
    - Operational demand
    - Sections of a hospital laboratory
    - Common areas
    - Design aspect
    - Space requirement
- Planning for 3 basic health laboratory

Unit-IV

- Health and Sanitation
- Disease Prevention & Community Organisation

Practicals

- Cleansing of glasswares (Pipettes, slides, and cover slips, syringes and needles, blood cell diluting pipettes, glassware used for bacteria investigation)
- Making simple glass items in the laboratory (pasture pipette, stirring bending glass and preparing a wash bottle)
- Demonstration of use and care of instruments, cautions precautions to be taken
- Demonstration of safety measures during work in laboratory in various fields
- Demonstration of safe handling of specimens and infections agents including HBs Ag (Hepatitis) and AIDs (HIV)
    - Specimen handing collection, preservation, transportation, disposal
    - Laboratory safety and first Aid
    - Biomedical waste management
    - Computer application

Paper-II

Theory – 40
Practical - 60

Unit-I Biochemistry

- Inorganic and physical aspects of biochemistry, structure of atoms, symbol, valency and formula
  - Chemical units- Atomic weight, molecular weight, gram mole Equivalent weight, gram equivalent
  - Fundamental laws of Chemistry
  - Acids, bases and salts
  - Hydrogen concentration and pH Measurement – Indicators and pH meter
  - Buffers, preparation
  - Solutions – solute and solvent, saturated solutions, solubility Temp. effects
  - Concentrations of solutions in different ways viz molar normal percentage etc.
  - Simple qualitative analysis – captions Anions
  - Volumetric (Titrimetric) analysis
  - Primary and secondary standards
  - Acid-base titrations, permanaganometry
  - Rules in volumetric analysis
  - Isotopes definition/examples/uses
- Chemistry of Bimolecular – carbohydrates, lipids, amino-acids, proteins, nucleic acids, Vitamins
- Isotopes

Unit-II Clinical Biochemistry

- Bioenergetics – Respiratory Chain, Oxidative, Phosphorylation
- Overview of Metabolism
- Carbohydrate Metabolism
  - Glycolysis and TCA cycle
  - Blood glucose homeostasis
  - Measurement of blood glucose
  - Glycosuria, Diabetes mellitus
- Lipid Metabolism
  - Cholesterol
  - Triglycerides
  - Lipoproteins
  - Ketone bodies – formation, ketosis, ketonuria
- Amino acid & Protein metabolism
  - Urea synthesis – uremia
  - Other nonoperation nitrogenous compound like vaginate uvicacid

    - Biochemical veactions of aminoacids Transamination, deamination
    - Synthese of physiologically important substances from aminoacids
- Metabolic inter-relationships
- Principles of inborn errors of metabolism
- Water, Na+K=and CI, Bicarbonates, Acid Base Balance, calcium and Phosporous
- Role and iron, Iodine and other Trace elements

Unit-III General Principles of Laboratory Technology

- Role of laboratory in health care delivery – human health and diseases
- Role of laboratory in diagnosis of disease in health delivery system
    - Duties and responsibility of laboratory personal
- Laboratory services in the health delivery system in India
- Laboratory planning
    - General principles
    - Laboratory goals
    - Operational date
    - Guiding principles for planning hospital laboratory services particularly for basic health laboratory
- Laboratory organization
    - General principles
    - Components and functions of a laboratory
    - Staffing the laboratory
    - Job description- job specifications
    - Work schedule- personal rearrangement and work load assessment
- Care of laboratory glassware, equipments and chemicals verbal
- Principals – different types of glassware and plastic ware
    - Care and cleaning of glass wares
    - Making simple glasswares in the laboratory
    - Care of equipments and apparatus
    - Laboratory chemicals, their proper use and care, storage
    - Labeling
- Specimen handling
    - Collection techniques and containers for specimen collection
    - Types of specimen
        - Entry, handling
        - Specimen transport
        - Specimen disposal
        - Specimen preservation
- Laboratory safety
    - General principles
    - Laboratory hazards

    - Safety programme
    - First aid
    - Safety measure – mechanical, electrical, chemical, Biological & radioactive
- Communication: Personnel Development and Relations, general principles
    - Inter/intra departmental communications request/report forms
- Basic Principles of quality control
    - General Principles
    - Non-analytical functions
    - Request specifications
    - Specimen specification
    - Distribution of tests
    - Analytical function
    - Methods, equipment, reagents and material controls, proficiency testing
    - Materials management
    - General principles
- Basic Medical Nursing

Unit. IV Clinical Pathology

- Urine analysis
    - Physical, Chemical, Microscopic
- Faucal analysis
    - Physical
    - Chemical – Occult blood exam.
    - microscopic
- Sputum analysis – physical and microscopic
- Serainal Fluid analysis
- Examination of aspiration fluid
        - Ascetic fluid
        - Pleural fluid
        - CSF
        - others
- Pregnancy tests

Practicals

- Routine analysis of urine
- Analysis of faces including occult blood test
- Examination of sputum
- Seminal fluid analysis
- Analysis of aspiration fluid
- Pregnancy test – urine for HCG