FUNDAMENTALS OF HUMAN ANATOMY & PHYSIOLOGY (THEORY)
Course Code: ANA/PHY.101T
Credit Hours: 3
Semester: I

SECTION I: HUMAN ANATOMY

UNIT-I : Structure & function of human body (2 Lectures)

- Definitions, Subdivisions of Anatomy, Terms of location and position, Fundamental Planes, organization of human body. Cell (structure & function). Tissues (Epithelium, Connective, Muscular, Nervous)

UNIT- II : Locomotion and support (2 Lectures)

- *Skeletal system:* Types of bones, Bones and their parts, Divisions of skeleton
- *Joints:* classification, types of movements with examples.

UNIT- III : Nervous system (2 Lectures)

- *Central nervous system*: Spinal Cord (anatomy, functions), reflex- arc, meninges.
- *Brain:* Hind Brain, Midbrain, Forebrain.

UNIT-IV : Sensory System (2 Lectures)

- Anatomical introduction to skin & Sense organs: Eye, Ear ,Nose

UNIT-V : Circulatory system (2 Lectures)

- *Heart:* size, location, coverings, chambers, blood supply, the blood vessels. General plan of circulation, pulmonary circulation. Names of arteries and veins and their positions.

UNIT- VI : Respiratory system (2 Lectures)

- Organs of Respiratory System. Brief knowledge of parts and position
- *Conducting portion:* Nose, nasal cavity, Para nasal air sinuses, Larynx, trachea, bronchial tree.
- *Respiratory portion:* Pleura and lungs.

UNIT- VII: Digestive system (2 Lectures)

- Components of Digestive system, Anatomy of organs of digestive system, mouth, tongue, teeth,
- salivary glands, liver, biliary apparatus, pancreas.

UNIT- VIII: Excretory system (2 Lectures)

- *Kidneys:* location, gross structure, excretory ducts, ureters, Urinary bladder, Urethra.

UNIT- IX: Reproductive system (2 Lectures)

- *Male Reproductive System:* Testis, Duct system.
- *Female Reproductive System:* Ovaries, Duct system

UNIT- X : Endocrine system (2 Lectures)

- *Endocrine glands:* Positions, Hormones secreted and their functions- Pituitary, Thyroid parathyroid, Adrenal glands, Gonads & Islets of pancreas

SECTION II: HUMAN PHYSIOLOGY

Unit I – Cell **(1 Lecture)**

Cell membrane& cytoplasmic organelles- Functions

Unit II – Blood **(4 Lecture)**

Composition and function of blood

Blood Cells- Types, structure and functions

Blood group- ABO Blood group & Rh factor, Blood groups and uses of blood grouping. Rh incompatibility

Blood Clotting: Definition, Mechanism of haemostasis, Physiology of clotting mechanism.

Anemia- Definition, Types and Clinical features of anemia.

Unit III – Cardiovascular System **(3 Lecture)**

Functions of heart and blood vessels

Heart rate :- Definition and factors affecting it

Cardiac cycle: Definition and events in the cardiac cycle, Heart sounds

Unit IV - Respiratory System **(2 Lecture)**

Functions of Respiratory organs

Mechanism of Respiration: Inspiration & expiration, Muscles of Inspiration & Muscles of expiration, Accessory muscles of Respiration

Lung Volumes and Capacities: Vital Capacity, Tidal Volume, Residual Volume

Unit V – Gastrointestinal system **(3 Lecture)**

Functions of various parts of GIT

Digestion & absorption of carbohydrates, fats, protein in various parts of GIT

Functions of Saliva, Gastric Juice, Bile, Pancreatic Juice

Functions of Liver , Gall Bladder and Pancreas

Movements of Small Intestine and large Intestine

Unit VI - Excretory System **(4 Lecture)**

Functions of kidney, ureters, urinary bladder and urethra

Nephron & Function of various parts

Mechanism of Urine Formation

Unit VII – CNS **(4 Lecture)**

Introduction: Organization and function of the nervous system

Central Nervous System: General Description- Cerebral hemisphere (cerebrum); Basal ganglia, Thalamus; Hypothalamus, Brain stem: Medulla; Pons, Mid Brain; Reticular formation, Cerebellum, Spinal Cord: Structure and function; Ascending (sensory) tracts; Descending (motor) tracts, Cerebrospinal fluid (CSF)

Peripheral nervous System: Somatic nervous system: Spinal nerves; Reflexes: Mono and Polysynaptic reflex; Cranial nerves

Autonomic nervous system (ANS): Sympathetic, parasympathetic

Unit VIII - Muscular System **(4 Lecture)**

Structure & Functions of skeletal muscle, smooth muscle & Cardiac muscle

Skeletal Muscle: -Action Potential, Excitation contraction coupling, Muscle tone, Neuro- Muscular Junction

Unit IX – Endocrine System **(5 Lecture)**

Hormones: GH, Thyroid Hormones, Parathyroid Hormones, Insulin, Glucocorticoids, Mineralocorticoids, ADH, oxytocin, Testosterone – their source & actions

FUNDAMENTALS OF HUMAN ANATOMY & PHYSIOLOGY (PRACTICAL)
Course Code: ANA/PHY.101P
Credit Hours: 1.5

- Identification and description of all anatomical structures.
- Demonstration through slides, models, charts etc..
- Measurement of pulse, blood pressure
- Identification/counting of blood cells by study of peripheral blood smear
- Determination of blood groups, bleeding/clotting times. Estimation of Hb

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1^{st} ,2^{nd} Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

CONCEPTUAL MICROBIOLOGY & PATHOLOGY (THEORY)
Course Code: MIC/PAT.102T
Credit Hours: 3
Semester: I

SECTION I : MICROBIOLOGY

UNIT- I: Origin and Evolution of Microbiology (3 Lectures)

- Introduction, History & scope of Microbiology
- General characteristics of Microorganisms: Bacteria, viruses, fungi.

UNIT - II: Study of Common Lab Instruments (3 Lectures)

- Microscope: Types , principles & uses
- Autoclave, Hot air oven, Incubator, Laminar air flow, Colony counter : Principles & uses

UNIT III: Morphology of Bacteria & Viruses (3 Lectures)

- *Bacterial anatomy:* Cell wall, Cell membrane, Capsule, Flagella, Nucleoid, Bacterial Spore.
- Structure of viruses, Concepts of replication & cultivation
- Study of bacteria: Preparation of Stains, various Staining techniques (Simple staining, Gram staining, Acid-fast staining, Negative staining & Albert staining).

UNIT- IV: **Growth & Nutrition of bacteria: (3 Lectures)**

- Culture media and Culture methods
- *Bacterial Growth:* Growth Curve, Generation Time, Environmental factors affecting growth.
- Bacterial nutrition: Nutritional groups, Common Nutritional requirements

UNIT- V: Control of Microbial Growth (3 Lectures)

- Sterilization and disinfection

UNIT-VI: Immunity & Infection (3 Lectures)

- *Immunity:* Types of immunity, Antigens & Antibodies, Prophylactic Immunization
- *Infection:* Types, Various routes & modes of transmission, Nosocomial Infections

UNIT-VII: Biomedical Waste & Management (2 Lectures)

- Waste categories, Waste treatment & disposal

SECTION II : PATHOLOGY

UNIT-I: Introduction (1 Lectures)

- Definition, important terminology, different branches

UNIT-II: Cell Injury and Cellular Adaptations (4 Lectures)

- *Cell Injury:* types of cell injury, etiology of cell injury, morphology of cell injury, cellular swelling.
- *Cell Death:* types- Autolysis, Necrosis, Apoptosis & Gangrene.
- *Cellular Adaptations*: Atrophy, Hypertrophy, Hyperplasia & Dysplasia.

UNIT-III: Inflammation (3 Lectures)

- Acute inflammation - vascular event, cellular event, inflammatory cells.
- Chronic Inflammation - general features

UNIT-IV: Hemodynamic Disorders (3 Lectures)

- Edema, hyperemia, congestion, hemorrhage, thrombosis, ischemia & infarction.

UNIT-V: Neoplasia (2 Lectures)

- Definition,difference between benign tumor and malignant tumor.

UNIT-VI: Healing (2 Lectures)

- Definition, different phases of healing, factors influencing wound healing.

CONCEPTUAL MICROBIOLOGY & PATHOLOGY (PRACTICAL)
Course Code: MIC/PAT.102P
Credit Hours: 1.5

Microbiology

- Handling and maintenance of instruments required for routine lab work.
- *Various staining Techniques:* Gram stain, Acid-fast stain, Negative stain, Albert Stain.
- Various culture techniques
- Demonstration of Sterilization methods
- Preparation of commonly used culture media: Nutrient agar, Blood/chocolate agar, MacConkey agar, Sabouraud dextrose agar.

Pathology

- Components & setting of the Compound microscope.
- Focusing of object.
- Use of low & high power objectives of microscope.
- Use of oil immersion lens.
- Care and Maintenance of the microscope.
- Different types microscopy

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

CONCEPTUAL BIOCHEMISTRY (THEORY)
Course Code: BIO.103T
Credit Hours: 2
Semester: I

UNIT -I: Introduction to Biochemistry (2 Lectures)

- Important definitions (Diffusion, Osmosis, Surface Tension, Adsorption , Absorption) & scope of biochemistry

UNIT -II: Carbohydrate (3 Lectures)

- Classification with structures
- Importance of Carbohydrates

UNIT -III: Lipids (3 Lectures)

- Classification
- Importance of Lipids

UNIT -IV: Proteins (4 Lectures)

- Amino Acid: Classification and general Properties
- Importance of Proteins
- Classification of Protein (in brief)

UNIT -V: Nucleotides (4 Lectures)

- Nucleoside & Nucleotide
- General structures of Purine and pyrimidine
- Brief discussion of DNA & RNA
- Structure of DNA

UNIT -VI: Electrolytes (3 Lectures)

- Source, function & deficiency symptoms of Sodium, Potassium, Calcium, phosphorus, Iron, Zinc & Chloride in human body.

UNIT - VII: Analytical Chemistry (5 Lectures)

Concepts of : Percent, Morality, Molality, Normality

- *SI Units:* Deci, Centi, Milli, Micro, Nano, Pico, Kilo, Mega, Giga & Angstrom
- **Normal Values & Interpretations:**
  - *Electrolytes:* Sodium, Potassium, Calcium, Iron, Chloride
  - *Renal Function Test*: Urea, Creatinine, Uric Acid, Glucose
  - *Urine Analysis:* Composition, Colour, Volume, pH, Specific Gravity, Turbidity
  - *Liver Function Test :* SGOT, SGPT, Bilirubin, Albumin, Globulin & Alkaline Phosphatase
  - *Carbohydrates:* Fasting , Random, GTT
  - *Lipid Profile :* Cholesterol, Triglycerides, HDL,LDL, VLDL

UNIT -VIII: Acids & Bases (2 Lectures)

- Definition, Classification of acids and bases.
- Physical and chemical properties with examples.
- Arrhenius concept of acids and bases.
- Classification of acids and bases.
- pH, Buffer Solutions

CONCEPTUAL BIOCHEMISTRY (PRACTICAL)
Course Code: BIO.103P
Credit Hours: 1.5

- Preparation of common lab reagents.
- General description of equipment's used in Biochemistry Lab.
- *Working & Uses of:* Spectrophotometer, Water bath, Centrifuges, Analytical Balances, pH meter, Colorimeter.

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1^{st} ,2^{nd} Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

HUMAN VALUES & PROFESSIONAL ETHICS
Course Code: PMS.104T
Credit Hours: 2
Semester : I

UNIT-I: Need, Basic Guidelines, Content and Process for Value Education (10 Lectures)

- Understanding the need, basic guidelines, content and process for Value Education
- Self Exploration–what is it? - its content and process; 'Natural Acceptance' and Experiential Validation- as the mechanism for self exploration
- Continuous Happiness and Prosperity- A look at basic Human Aspirations
- Right understanding, Relationship and Physical Facilities- the basic requirements for fulfillment of aspirations of every human being with their correct priority
- Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario
- Method to fulfill the above human aspirations: understanding and living in harmony at various levels

UNIT-II: Understanding Harmony in the Human Being - Harmony in Myself! (10 Lectures)

- Understanding human being as a co-existence of the sentient 'I' and the material 'Body'
- Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha
- Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer)
- Understanding the characteristics and activities of 'I' and harmony in 'I'
- Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail
- Programs to ensure Sanyam and Swasthya - Practice Exercises and Case Studies will be taken up in Practice Sessions.

UNIT-III: Understanding Harmony in the Family and Society (10 Lectures)

- Understanding harmony in the Family- the basic unit of human interaction
- Understanding values in human-human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

INTRODUCTION TO DIALYSIS TECHNOLOGY (THEORY)
Course Code: MED.105T
Credit Hours: 3
Semester: I

UNIT- I **(8 Lectures)**
History, types of Dialysis
UNIT- II **(12 Lectures)**
Principles of Dialysis, quantification of adequacy
UNIT- III **(8 Lectures)**
Dialysis Team-rights-responsibilities-patient doctor relationship
UNIT- IV **(8 Lectures)**
Screening the patient prior to dialysis
UNIT- V **(8 Lectures)**
Preparation & assessment of the dialysis equipments
UNIT- VI **(8 Lectures)**
Complications in dialysis patients
UNIT- VII **(8 Lectures)**
Renal data maintenance

INTRODUCTION TO DIALYSIS TECHNOLOGY (PRACTICAL)
Course Code: MED.105P
Credit Hours: 1.5

- Demonstration of various equipments & procedure of dialysis treatment
- Demonstration of assessment & management of patient for dialysis Treatment

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1^{st} ,2^{nd} Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

ENGLISH FOR PROFESSIONALS
Course Code: PMS.106T
Credit Hours: 2
Semester: I

UNIT-I: Grammar **(10 Lectures)**

- Narration.
- Voice change (Use of passive voice particularly in scientific and official writing).
- Use of articles and preposition.
- The language of Doctor and Patient.
- General description and Medical description.
- Medical terminology – roots.
- Prefixes and suffixes.
- Medical abbreviations.
- Punctuation
- Common errors in English.

UNIT-II: Writing Skills **(10 Lectures)**

- Precis writing.
- Report writing (with special stress on scientific/technical reports, preparing field/observation report).
- Letter writing/application writing (Social, business letter, applying for a job, for higher studies, Preparing curriculum vitae, subscribing to a journal, letters to the Editor).
- Essay writing

UNIT-III: Spoken English **(10 Lectures)**

- Advertisements/Posters
- Telegrams & short post cards
- Note & notice
- Front Desk management, Fixing appointments, getting information – Managing medical representatives, able to answer FAQs, lab reports writing, telephoning in a hospital: the object is to practice influent conversation.

SCHEME OF EXAMINATION

Type of Questions	Total No. of Questions	No. of Questions to be attempted	Marks (Each Question)	Subtotal
SEC -A (Grammar)	25	20	1	20
SEC -B (Essay writing)	3	1	10	10
SEC-C(Precis writing)	1	1	5	10
SEC-D(Letter writing)	2	1	5	10
			TOTAL MARKS	**50**

COMMUNICATION AND SOFT SKILLS
Course Code: PMS.107T
Credit Hours: 2
Semester: I

UNIT-I: Introduction to Communication **(5 Lectures)**

- Purpose of Communication
- Process of Communication
- Importance of Communication in Business
- Barriers to Communication
- Measures to Overcome the Barriers to Communication.

UNIT-II: Types of Communication **(5 Lectures)**

- Verbal Communication: Importance of verbal communication and Advantages of verbal communication
- Non Verbal Communication: Importance of written communication and Significance of Non-verbal Communication

UNIT-III: Communication Network **(5 Lectures)**

- Scope and Types of Communication Network
- Formal and Informal Communication Network
- Upward Communication
- Downward Communication
- Horizontal Communication
- Diagonal Communication.

UNIT-IV: Letter and Resume Writing **(5 Lectures)**

- Types of Letter – Formal/Informal
- Importance and function of Letter Writing
- Business Letters / Elements of Structure
- Resume and Covering Letter
- Guidelines for making a Result – Oriented Resume/ Helpful Hints

UNIT-IV: Interview preparation **(5 Lectures)**

- Types of Interview
- Preparing for an Interview
- Attending an Interview
- Employers Expectation
- General Etiquette

UNIT-IV: Group Discussion and Presentation **(5 Lectures)**

- Process of Group Discussion
- Guidelines
- Helpful Expressions
- Evaluation

UNIT-VI: Presentation Skills **(5 Lectures)**

- Importance of Presentation skills
- Organizing Contents/ Structural Elements of a Presentation Concerning Data
- Visual Aids and Voice & Picture Integration
- Guidelines to make Presentation Interesting
- Body Language

(Note: Every student shall be given 15 minutes of presentation time)

SCHEME OF EXAMINATION

Type of Questions	Total No. of Questions	No. of Questions to be attempted	Marks (Each Question)	Subtotal
SEC -A (Fill ups)	10	10	1	10
SEC -B (Short Essay)	6	5	4	20
SEC-C (Long Essay)	3	2	5	10
SEC-D (Letter writing)	2	1	10	10
			TOTAL MARKS	**50**

ENVIRONMENTAL STUDIES
Course Code: PMS.108T
Credit Hours: 2
Semester: II

UNIT-I : Natural Resources (10 Lectures)

- *Renewable and non-renewable resources :*Natural resources and associated problems.
- *Forest resources :* Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
- *Water resources :* Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
- *Mineral resources :* Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- *Food resources :* World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- *Energy resources:* Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
- *Land resources:* Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

UNIT-II : Ecosystems (4 Lectures)

- Concept of ecosystems, Structure and function of an ecosystem.
- Producers, consumers and decomposers.
- Energy flow in the ecosystem.
- Ecological succession.
- Food chains, food webs and ecological pyramids.
- *Introduction, types, characteristic features, structure and function of the following ecosystem:* Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

UNIT-III: Biodiversity and its Conservation (3 Lectures)

- Introduction – Definition: genetic, species and ecosystem diversity.
- *Threats to biodiversity:* habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India
- *Conservation of biodiversity:* In-situ and Ex-situ conservation of biodiversity.

UNIT-IV: Environmental Pollution (7 Lectures)

- *Definition, Cause, effects and control measures of :* Air pollution, Water pollution, Soil pollution, Noise pollution, Thermal pollution
- Role of an individual in prevention of pollution.
- *Disaster management:* floods, earthquake, cyclone and landslides.

UNIT-V : Social Issues and the Environment (4 Lectures)

- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns.
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust
- *ACTS:* Environment Protection Act, Air (Prevention and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act

UNIT-VI : Human Population and the Environment **(2 Lectures)**

- Population explosion – Family Welfare Programme.
- Human Rights & Value Education.
- Women and Child Welfare.

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

APPLIED ANATOMY & PHYSIOLOGY RELATED TO DIALYSIS TECHNOLOGY (THEORY)
Course Code: ANA/PHY.109T
Credit Hours: 3
Semester: II

SECTION-I: APPLIED ANATOMY (10 Lectures)

- Histology of kidney.
- Blood supply of kidney.
- Development of kidney in brief.
- Anatomy of peritoneum including concept of abdominal hernias.
- *Anatomy of vascular system:*
  a. Upper limb vessels: course, distribution, branches, origin & abnormalities.
  b .Neck vessels: course, distribution, branches, origin & abnormalities.
  c. Femoral vessels: course, distribution, branches, origin & abnormalities.

SECTION-I: APPLIED PHYSIOLOGY (30 Lectures)

- Mechanism of urine formation.
- Glomerular filtration rate (GFR).
- Clearance studies.
- Physiological values of urea, creatinine, electrolytes, calcium, phosphorous, uric acid, magnesium, glucose; 24 hours urinary indices – urea, creatinine, electrolytes, calcium, magnesium.
- Physiology of renal circulation
- Factors contributing & modifying renal circulation.
- Autoregulation.
- Hormones produced by kidney & physiologic alterations in pregnancy.
- *Haemostasis:* coagulation cascade, cogulation factors, auto regulation, BT, CT, PT, PTT, thrombin time.
- *Acid base balance:* basic principles & common abnormalities like hypokalemia, hyponatremia, hyperkalemia, hypernatremia, hypocalcemia, hypercalcemia, pH, etc.
- Basic nutrition in renal diseases.

APPLIED ANATOMY & PHYSIOLOGY RELATED TO DIALYSIS TECHNOLOGY (PRACTICAL)
Course Code: ANA/PHY.109P
Credit Hours: 1.5

- Demonstration through slides, charts & other methods

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	**Marks**
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

SURGICAL MANAGEMENT IN DIALYSIS (THEORY)
Course Code: SUR.110T
Credit Hours: 4
Semester: II

UNIT- I **(8 Lectures)**
Introduction of surgery & basic principles of surgery.- Wound healing , shock, hemorrhage etc.
UNIT- II **(9 Lectures)**
Brief Introduction to Tumors, benign & malignant, cysts, ulcers,
UNIT- III **(8 Lectures)**
Fractures : classification and management of fracture, Complications & their Management
UNIT- IV **(9 Lectures)**
Common Surgical Diseases & their diagnosis & management & critical care especially related to Renal Diseases.
UNIT- V **(8 Lectures)**
Specialized Surgical techniques: Renal biopsy, Abdominal paracentesis, thoracoparacentesis.
UNIT- VI **(8 Lectures)**
Different surgical Instruments: Instruments used in major surgical operation & critical care management.
UNIT- VII **(10 Lectures)**

- Complications: Related to equipment
  a. Thermal & electrical injuries
  b. Monitoring instruments
  Being prepared with back up ventilation: Pre-use checkout, Maintenance, User education
- *Cardiovascular System*
  a. Hypotension
  b. Hypertension
  c. Tachycardia
  d. Bradycardia
  e. Arrhythmias
  f. Shock
  g. Ischemia & infarction

SURGICAL MANAGEMENT IN DIALYSIS (PRACTICAL)
Course Code: SUR.110P
Credit Hours: 2

- Demonstration of general surgical equipments & their uses
- Demonstration of Renal surgeries
- Demonstration of management of surgical cases

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1^{st} ,2^{nd} Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

CLINICAL NEPHROLOGY (THEORY)
Course Code: PAT.111T
Credit Hours: 4
Semester: II

Definition, symptoms, complications, diagnosis, treatment and prevention

UNIT- I **(6 Lectures)**
Renal failure: Acute & chronic renal failure
UNIT- II **(6 Lectures)**
Nephritic syndrome – primary & secondary
UNIT- III **(6 Lectures)**
Congenital & inherited renal diseases
UNIT- IV **(6 Lectures)**
Urinary Tract Infection
UNIT- V **(6 Lectures)**
Asymptomatic urinary abnormalities
UNIT- VI **(6 Lectures)**
Renal stones
UNIT- VII **(6 Lectures)**
Obstructive nephropathies
UNIT- VIII **(6 Lectures)**
Renal vascular disorders
UNIT- IX **(6 Lectures)**
Pregnancy associated renal diseases

CLINICAL NEPHROLOGY (PRACTICAL)
Course Code: PAT.111P
Credit Hours: 2

- Demonstration of clinical cases of renal diseases & their management

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

BASIC HAEMATOLOGY (THEORY)
Course Code: PAT.112T
Credit Hours: 3
Semester: II

UNIT –I: Blood & its Components (15 Lectures)

- Blood and its constituents
- Origin, Development, maturation and fate of blood cells.
- Collection of blood –capillary and venous blood collection
- *Anticoagulants:* various anticoagulants and their uses, advantages and disadvantages.
- Different types of haemocytometers, their ruling and uses.
- *Erythrocytes*: morphology of RBC in health and disease, functions of RBC, RBC counting, diluting fluids used, erythrocyte indices
- *Leucocytes* : Structure, function morphology, leucocyte count, absolute eosinophil count,
- *Platelets:* Structure and function, counting of platelets, diluting fluids.

UNIT-II: Hematological Disorders (15 Lectures)

- *Anemia:* Classification - Morphological & etiological.
- *Iron Deficiency Anemia:* Distribution of body Iron, , causes of iron deficiency, lab findings.
- *Megaloblastic Anemia :* Causes, Lab findings.
- *Hemolytic Anemia* : Definition, causes, classification & lab findings.
- *Bone Marrow :* Cell composition of normal adult Bone marrow, Aspiration, Indication, Preparation & Staining,Special Stain for Bone Marrow -Periodic Acid Schiff, Sudan Black, Myeloperoxidase.
- *Leukemia :* Classification, Blood Picture, Differentiation of Blast Cells.

UNIT-III: Basic Hematological Techniques (20 Lectures)

- Characteristics of good technician
- Preparation of specimen collection material.
- Lab. request form.
- Basic steps for drawing a blood specimen by venipuncture. Complications of venipuncture.
- Patient after care
- Specimen rejection criteria for blood specimen
- Hemolysis of blood
- Blood collection by skin puncture (Capillary Blood), Arterial puncture.
- *Anticoagulant*- EDTA, Citrate, Oxalate, Heparin, sodium fluoride.
- Separation of serum/Separation of plasma
- Changes in blood on keeping
- Maintenance of specimen identification
- Transport of the specimen.
- Effect of storage on Blood Cell Morphology
- Universal precautions

BASIC HAEMATOLOGY (PRACTICAL)
Course Code: PAT.112P
Credit Hours: 1.5

- Basic requirements for hematology laboratory.
- Glassware for Hematology.
- Equipments for Hematology.
- Anticoagulant vial preparation.
- Complete Blood Counts.
- Determination of Hemoglobin.
- TRBC Count by Hemocytometers.
- TLC by Hemocytometer.
- Differential Leukocyte count.
- Determination of Platelet Count.
- Determination of ESR by Wintrobes.
- Determination of ESR by Westergeren's method.
- Determination of PCV by Wintrobes.
- Erythrocyte Indices- MCV, MCH, MCHC.
- Reticulocyte Count.
- Absolute Eosinophil Count.
- Morphology of Red Blood Cells.

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

BIOSTATISTICS & COMPUTER APPLICATIONS
Course Code: PMS.201T
Credit Hours: 2
Semester: III

SECTION-I: BIOSTATISTICS (15 Lectures)

- Introduction to data and statistics
- Presentation of data:
  - Bar diagram
  - Histogram
  - Frequency polygon
  - Frequency curve, Cumulative frequency curve.
- Measure of central tendency:
  - Mean
  - Median
  - mode (individual, discrete and continuous data).
- Measure of variability:
  - Range
  - Standard deviation
  - Variance and coefficient of variation

SECTION-II: COMPUTER APPLICATIONS (15 Lectures)

- Computer: General Introduction, History of computer development and respective generation: Need to use computers, Applications in Laboratory and in general.
- Input and Output Device
- Memory
- Personal Computer
- Data Representation and Number System
- Software
- Data Communication
- Internet, Cyber etiquette
- Microsoft Office: PowerPoint Presentations, Microsoft word, excel sheet

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

RENAL PATHOLOGY (THEORY)
Course Code: PAT.202T
Credit Hours: 3
Semester: III

UNIT- I **(5 Lectures)**
Congenital abnormalities of urinary system

UNIT- II **(5 Lectures)**
Classification of renal diseases

UNIT- III **(5 Lectures)**
Glomerular diseases – causes, types & pathology

UNIT- IV **(5 Lectures)**
Tubulointerstitial diseases

UNIT- V **(5 Lectures)**
Renal vascular disorders

UNIT- VI **(5 Lectures)**
End stage renal diseases – causes & pathology

UNIT- VII **(5 Lectures)**
Pathology of kidney in hypertension, diabetes mellitus

UNIT- VIII **(5 Lectures)**
Pathology of peritoneum – peritonitis – bacterial, tubular & sclerosing peritonitis

UNIT- IX **(5 Lectures)**
Pathology of urinary tract infections

UNIT- X **(5 Lectures)**
Pyelonephritis & tuberculous pyelonephritis

RENAL PATHOLOGY (PRACTICAL)
Course Code: PAT.202P
Credit Hours: 1.5

- Demonstration of diagnostic tests for given pathologies as per theory syllabus

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

APPLIED PHARMACOLOGY (THEORY)
Course Code: PHR.203T
Credit Hours: 3
Semester: III

UNIT-I: Autonomic Nerves System (4 Lectures)

- List of drugs acting on ANS including dose, route of administration, indications, contra indications and adverse effects.

UNIT-II: Cardiovascular Drugs (6 Lectures)

- Mode of action, side effects and therapeutic uses of the following drugs:
- Anti hypertensives
- Anti arrhythmic drugs.
- Cardiac glycosides
- Coronary vasodilators
- *Drugs used in haemostais:* anticoagulants thrombolytics and anti thrombolytics.
- Drugs used in the treatment of shock.

UNIT-III: Anaesthetic agents. (6 Lectures)

- Definition of general and local anaesthetics
- Intravenous general anaesthetic agents.
- Local anaesthetics: classification, mechanism of action, duration of action and methods to prolong the duration of action, preparation, dose and routes of administration.

UNIT-IV: Analgesics (6 Lectures)

- Definition and classification.
- Routes of administration, dose, frequency of administration, side effects and management of non opioid and opiod analgesics.

UNIT-V: Antihistamines and Antiemetics (4 Lectures)

- Classification, mechanism of action, adverse effects, preparations, dose and routes and administration.

UNIT-VI: CNS Stimulants & Depressants (6 Lectures)

- Alcohol
- Sedatives, hypnotics and narcotics.
- Neuromuscular blocking agents and muscle relaxants.

UNIT-VII: Pharmacotherapy of Respiratory Disorders (6 Lectures)

- Pharmacotherapy of bronchial asthma.
- Pharmacotherapy of cough.
- Mucokinetic and mucolytic agents.

UNIT-VIII: Corticosteroids (4 Lectures)

- Classification, mechanism of action, adverse effects and complications, preparation, dose and routes of administration.

UNIT-IX: Diuretics (3 Lectures)

- Mode of action of diuretics
- Preparations, dose and routes of administration.

APPLIED PHARMACOLOGY (PRACTICAL)
Course Code: PHR.203P
Credit Hours: 1.5

- Conducted as per theory syllabus

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1^{st} ,2^{nd} Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

APPLIED DAILYSIS TECHNOLOGY-I (THEORY)
Course Code: MED.204T
Credit Hours: 4
Semester: III

- History , types & principles of dialysis. **(4 Lectures)**
- Theory of haemodialysis: diffusion, osmosis, ultra filtration & solvent drag. **(4 Lectures)**
- Haemodialysis apparatus: types of dialyser & membrane, dialysate. **(4 Lectures)**
- Physiology of peritoneal dialysis. **(4 Lectures)**
- Dialysis machines: mechanism of functioning & management: **(6 Lectures)**
  a .Haemodialysis machine.
  b. Peritoneal dialysis machine.
- Biochemical investigations required for renal dialysis. **(6 Lectures)**
  a.Adequacy of dialysis:
  b.Haemodialysis.
  c.Peritoneal dialysis.
- Peritoneal equilibriation test (PET). **(5 Lectures)**
- Anti coagulation **(5 Lectures)**
- Withdrawal of dialysis criteria: **(6 Lectures)**
  a.Acute dialysis.
  b.Chronic dialysis.
- Dialyser reuse. **(3 Lectures)**
- Continuous Renal Replacement Therapy. **(3 Lectures)**
- Complications in dialysis patients **(5 Lectures)**
- Dialysis in neonates, infants & children **(5 Lectures)**

APPLIED DAILYSIS TECHNOLOGY-I (PRACTICAL)
Course Code: MED.204P
Credit Hours: 2

- Demonstration of equipment preparation in Dialysis Treatment
- Demonstration of techniques of Dialysis as per the theory syllabus

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

CLINICAL HAEMATOLOGY (THEORY)
Course Code: PAT.205T
Credit Hours: 4
Semester: III

UNIT- I: Introduction **(5 Lectures)**

- Quality Assurance
- Blood collection procedures
- Anticoagulants used in Hematology: General applications
- Anemia: types causes

UNIT –II: Haemopoiesis **(8 Lectures)**

- Main Cell Lines
- Erythropoiesis
- Leucopoesis
- Functions of WBCs
- Functions of Platelets

UNIT –III: Complete Blood Count (CBC) **(12 Lectures)**

- Haemoglobin estimation
- Haemocytometry (Counting of Cells in Blood)
- Packed cell volume (PCV)
- Manual Cell Counts
- Use of Counting Chamber (Haemacytometer) for cell counting
- Red Cell Count (Manual Method)
- Red Blood Cell Indices
- WBC counts-Total and differential.
- Total Eosinophil count (TEC)
- Platelet count (Manual Method)
- Erythrocyte sedimentation rate

UNIT- IV: Examination of Peripheral Blood Smear **(8 Lectures)**

- Preparation of Blood Smear
- Staining of Blood Smear
- Microscopic Examination of the Blood Film
- The Differential Count of Leucocytes
    - Interpretation of the variations/Abnormalities in Leucocytes
    - Morphological Variations/Abnormalities in Erythrocytes

UNIT - V : Miscellaneous Investigations in Haematology **(12 Lectures)**

- Osmotic fragility
- Investigation of G-6 PD deficiency
- Examination of Bone Marrow Test for Sickle Cells
- Estimation on of Hb-F (Foetal – Haemoglobin) by Akali Denaturation Method
- Plasma haemoglobin and Haptoglobin, demonstration of hacmosiderin in urine

- Autohaemolysis Test
- Spectroscopic Examination of Blood for the detection of abnormal Hb pigments
- Reticulocyte Count
- Staining of Heinz Bodies
- Staining of Siderocytes (Demonstration of Pappenheimer Bodies)
- Peroxidase Staining
- PAS Reaction
- Neutrophil (Leucocyte) Alkaline Phosphatase

UNIT – VI: Haemostasis and Fibrinolysis (15 Lectures)

- Haemostasis
- Mechanism of Haemostasis
- Functions of Platelets in Haemostasis and Coagulation
- Coagulation
- Coagulation factors
- Pathways for the Coagulation Process
- Fibrinolysis
- Disorders of Blood coagulation
- Tests for Coagulation Function
- Clotting Time (Lee- White Method)
- Clot Retraction
- Test to measure the Extrinsic System:
- One –Stage Prothrombin Time(PT)
- Test for Prothrombin Consumption Index(PCI)
- Test for Intrinsic System
- Assays of Coagulation Factors

CLINICAL HAEMATOLOGY (PRACTICAL)
Course Code: PAT.205P
Credit Hours: 2

- Hb Estimation-Sahli's method & Cyanmethhaemoglobin method
- RBC Count
- Reticulocyte Count
- Preparation of blood smears and staining with Leishman stain
- WBC Count
- WBC –Differential Count
- Platelet Count
- Absolute Eosinophil Count
- ESR- Westergrens & Wintrobe's method,
- PCV.
- Sickling test-Demonstration
- Bone Marrow Smear preparation & staining procedure- Demonstration
- Demonstration of Malarial Parasite.

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1^{st} ,2^{nd} Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

APPLIED DIALYSIS TECHNOLOGY-II (THEORY)
Course Code: MED.206T
Credit Hours: 4
Semester: IV

- *Dialysis in special situations:* **(12 Lectures)**
  a.Patients with congestive cardiac failure.
  b. Advanced liver disease.
  c. Patients positive for HIV, HBSAg & HCV.
  d. Failed transplant.
  e. Poisioning cases.
  f.Pregnancy.
- *Special dialysis procedures:* **(10 Lectures)**
  a.Continuous therapies in haemodialysis.
  b.Different modalities of peritoneal dialysis.
  c.Haemodiafiltration.
  d. Haemoperfusion.
  e. SLED.
  f.MARS.
- *Plasmapheresis:* **(7 Lectures)**
- *Special problems in dialysis patients:* **(10 Lectures)**
  a.Psychology & rehabilitation.
  b.Diabetes
  c.Hypertension.
  d.Infections.
  e.Bone diseases.
- f.Aluminium toxicity **(7 Lectures)**
- Renal anaemia management: chronic dialysis. **(7 Lectures)**
- Nutritional management in dialysis patients **(7 Lectures)**

APPLIED DIALYSIS TECHNOLOGY-II (PRACTICAL)
Course Code: MED.206P
Credit Hours: 2

- Demonstration of techniques of Haemodialysis
- Demonstration of patient preparation , management of patient before during & after the dialysis treatment
- Demonstration of management of complications due to dialysis treatment

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	**Marks**
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

GENERAL MEDICINE (THEORY)
Course Code: MED.207T
Credit Hours: 3
Semester: IV

UNIT- I **(6 Lectures)**

History taking and symptomatology of : polyuria, heart burns, vomiting, diarrhea, jaundice, epistaxis.

UNIT- II **(6 Lectures)**

Abdomen- hepatomegaly, splenomegaly, cirrhosis, hepatitis, malaria, typhoid, dengue, renal diseases

UNIT- III **(10 Lectures)**

Disorders of circulatory & respiratory system: pleural effusion, pulmonary tuberculosis, pneumonia, dyspnoea hypoxia, cardiac failure, congenital heart diseases, hypertension.

UNIT- IV **(6 Lectures)**

Disorders of endocrine system: diabetes, hypoglycemia, Addison's disease, hyperthyroidism

UNIT-V **(6 Lectures)**

Disorders of nervous system: Hemiplegia, periplegia, paralysis, coma, Parkinson's disease.

UNIT-VI **(6 Lectures)**

Medical emergencies: cardiac arrest, bronchial asthma, respiratory failure, meningitis, acute poisoning.

UNIT- VII **(5 Lectures)**

Preventive aspects of medicine: Epidemiology of infectious diseases methods of prevention.

UNIT- VIII **(5 Lectures)**

Blood Disorders : Anemia's, leukemia's, AIDS.

GENERAL MEDICINE (PRACTICAL)
Course Code: MED.207P
Credit Hours: 3

– Conducted as per theory syllabus

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

IMMUNOLOGY & SEROLOGY (THEORY)
Course Code: MIC.208T
Credit Hours: 3
Semester: IV

UNIT-I: Introduction (4 Lectures)

- Immunity - Definition and classification
- General Principles of Innate & Acquired Immunity.
- Immune Response **-** Humoral immunity & cell mediated immunity.

UNIT-II: Structure and functions of Immune System (6 Lectures)

- Parts of Immune system
- T/B cells, other cells & their functions

UNIT-III: Antigens & Antibodies (6 Lectures)

- Antigen - Definition, classes, properties.
- Antibodies/Immunoglobulin's - Definition, Properties, Sub types of Immunoglobulin's

UNIT-IV: Antigen/Ab Reaction/Serological Refractions (10 Lectures)

- Features of antigen/antibody Reaction-
- Precipitation
- Agglutination
- Complement fixation test
- Neutralization
- Opsonization
- Immune adherence

UNIT-V: Hyper sensitivity Reactions (10 Lectures)

- General Principles of different types of hypersensitivity reactions
- Auto immune disorders

UNIT-VI: Vaccination/Immunization (4 Lectures)

- Types of vaccines
- Schedule & Vaccines

UNIT-VII: Serological diagnosis of microbial diseases (10 Lectures)

- TORCH profile: Widal , VDRL, RPR, Antistreptolysin'O test, CRP,Rheumatoid factor test, Rose waler test, Latex agglutination test, Fluorescent antibody test, Antinuclear antibody test.

IMMUNOLOGY & SEROLOGY (PRACTICAL)
Course Code: MIC.208P
Credit Hours: 1.5

- WIDAL Test
- VDRL Test
- RA Test
- CRP Test
- Pregnancy Test & HIV Test

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1^{st} ,2^{nd} Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

COMMUNITY HEALTH

Course Code: PMS.210T

Credit Hours: 2

Semester: IV

- General concepts of health and diseases with reference to natural history of disease with pre-pathogenic and pathogenic phase. The role of socio-economic and cultural environment in health and diseases-Epidemiology and scope. **(3 Lectures)**
- Public health administration-An overall view of the health Administration set up at centre and state level. **(3 Lectures)**
- The National Health Programmes- National Health programmes including tuberculosis, malaria, MCH and HIV/AIDS. **(3 Lectures)**
- Health problems in vulnerable groups-Pregnant and lactating women and infants and school going children-occupational groups, geriatrics. **(3 Lectures)**
- Occupational Health- Definition, scope-Occupational diseases, prevention of occupational diseases and hazards. **(3 Lectures)**
- Social security and other measures for the protection of occupational hazards, accidents and disease. Details of compensation acts. **(3 Lectures)**
- Family planning objectives of National family planning methods. A general idea of advantages and disadvantages of the method. **(3 Lectures)**
- Mental Health- community aspects of mental health; role of physiotherapists, therapists in mental health problems such as mental retardation etc. **(3 Lectures)**
- Communicable disease-An overall view of the communicable disease. Classification according to the principal mode of transmission. Role of insects and their vectors. **(3 Lectures)**
- International health agencies. **(3 Lectures)**

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

NUTRITION
Course Code: PMS.211T
Credit Hours: 2
Semester: IV

- Introduction to science of nutrition
- Food pattern and its relation to health **(2 Lectures)**
- Factors influencing food habits, selection and food stuffs **(3 Lectures)**
- Food selection, storage & preservation **(3 Lectures)**
- Classification of nutrients – macronutrients and micronutrients **(3 Lectures)**
- Proteins – types, sources requirements and deficiencies of proteins **(3 Lectures)**
- Carbohydrates sources, requirements & efficiency **(3 Lectures)**
- Fats – types, sources, requirements, deficiency and excess of fats **(3 Lectures)**
- Water – sources of drinking water, requirements, preservation of water **(2 Lectures)**
- Minerals – types, sources, requirements deficiencies of minerals **(3 Lectures)**
- Vitamins – types, sources, requirements deficiencies of vitamins **(3 Lectures)**
- Planning diets including renal diets **(2 Lectures)**

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

OCCUPATIONAL SAFETY & HEALTH
Course Code: PMS.212T
Credit Hours: 2
Semester: IV

UNIT - I : Safety and Health Management (4 Lectures)

i. Occupational Health Hazards, Promoting Safety, Safety and Health training, Stress and Safety.

ii. Ergonomics - Introduction, Definition, Objectives, Advantages.

Ergonomics Hazards - Musculoskeletal Disorders and Cumulative Trauma Disorders.

- Organizing for safety, Health and Environment.
- Organization: Structure, Function and responsibilities
- Safety Committee: Structure and function

UNIT - II : Radiation and Industrial Hazards (5 Lectures)

i. Types and effects of radiation on human body, Measurement and detection of radiation intensity. Effects of radiation on human body, Measurement – disposal of radioactive waste, Control of radiation

ii. Industrial noise -Sources, and its control, Effects of noise on the auditory system and health, Measurement of noise ,

iii. Different air pollutants in industries, Effect of different gases and particulate matter ,acid fumes , smoke, fog on human health

iv. Vibration - effects, measurement and control measures

v. Industrial Hygiene.

UNIT –III: Electrical Hazards (5 Lectures)

Safe limits of amperages, voltages, distance from lines, etc., Joints and connections, Overload and Short circuit protection, Earthing standards and earth fault protection , Protection against voltage fluctuations, Effects of shock on human body Hazards from Borrowed nutrals, Electrical equipment in hazardous atmosphere, Criteria in their selection, installation, maintenance and use, Control of hazards due to static electricity,

UNIT – IV : Fire and Other Hazards (3 Lectures)

i. General causes and classification of fire, Detection of fire, extinguishing methods, fire fighting installations with and without water.

ii. Machine guards and its types, automation. High pressure hazards, safety, emptying, inspecting, repairing, hydraulic and nondestructive testing, hazards and control in mines.

UNIT –V: Vibration and Noise (3 Lectures)

Activities related to vibrations, its impact on human health, abatement Sources, effects of noise on man, Measurement and evaluation of noise, Silencers, Practical aspects of control of noise

UNIT-VI: Theories & Principles of Accident Causation & Prevention (5 Lectures)

i. The effect of accident, unsafe act, unsafe condition, unpredictable performance, Human factors contributing to accidents - causes for unsafe acts,

ii. Safety and psychology -Theories of motivation and their application to safety. Consequences of accident, accident prevention programmers, Role of safety

Incident, accident, injury, dangerous occurrences, unsafe acts, unsafe conditions, hazards, error, oversight, mistakes, etc.

Accident Prevention : Theories / Models of accident occurrences, Principles of accident prevention, Accident and Financial implications.

UNIT-VII: First Aid (5 Lectures)

i. Body structure and Functions, Position of causality, the unconscious casualty, fracture and dislocation, Injuries in muscles and joints, Bleeding, Burns, Scalds and accidents caused by electricity, Respiratory problems, Rescue and Transport of Casualty. Cardiac massage, poisoning, wounds.

ii. Personal Protective Equipments: Need, selection, supply, use, care and maintenance, Personal protective devices for head, ear, face, eye, foot, knee and body protection, Respiratory personal protective devices.

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

APPLIED DIALYSIS TECHNOLOGY-III (THEORY)
Course Code: MED.301T
Credit Hours: 4
Semester: V

- Vascular access for haemodialysis & associated complications.
- *Peritoneal access devices:* types of catheter, insertion techniques & associated complications.
- Complications of dialysis: Infectious and non infectious complications of PD
  a. *Haemodialysis:* acute & long term complications.
  b. Peritoneal dialysis: mechanical & metabolic complications.
- Peritonitis & exit site infection.
- Recent advances in haemodialysis.
  a. Nocturnal dialysis.
  b. Online dialysis.
  c. Daily dialysis.
- Telemedicine in dialysis practice.
- Renal transplant co-ordination (Recipient and donor workup, psychosocial and legal aspects, cadaver donor Maintenance, principles of post operative management and follow-up)
- Principles of Intensive care (Monitoring and diagnostic procedures in ICU, General care of patient in ICU, Fluid management and parenteral nutrition, Infectious diseases in ICU, Respiratory Failure, Acid-base and electrolytes disorders, cardio vascular failure, liver failure, Head injury, principles of transfusion therapy).
- An introduction to common urosurgical procedures & instruments and their Maintenance.
- Preparation of dialysis patients for various surgical procedure and post operative

APPLIED DIALYSIS TECHNOLOGY-III (PRACTICAL)
Course Code: MED.301P
Credit Hours: 1.5

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

BLOOD BANK PROCEDURES & HAEMOGLOBINOPATHIES (THEORY)
Course Code: PAT.302T
Credit Hours: 4
Semester: V

UNIT-I: Blood Grouping (11 Lectures)

- Human Blood Group system
- ABO Subgroups
- Red Cell Antigen,Natural Antibodies
- Rh System,Rh Antigens & Rh Antibodies
- Hemolytic Disease of Newborn & Prevention
- Principal of Blood grouping, antigen-antibody reaction.
- Agglutination, Haemagglutination, Condition required for antigen antibody reaction.
- Blood grouping techniques, Cell grouping, Serum grouping.
- Methods for ABO grouping- Slide & Tube Method, Cell grouping, Serum grouping, Rh grouping by slide & tube method.
- Difficulties in ABO grouping, Rouleaux formation, how it interfere with Blood grouping.
- Auto agglutinins
- Antiserum used in ABO test procedures, Anti –A, Anti-B Anti- AB Antiserum.

UNIT-II: Blood Transfusion (5 Lectures)

- Principal & Practice of blood Transfusion.
- Blood Transfusion service at District level.
- Guide lines for the use of Blood, Appropriate use of Blood, Quality Assurance.
- Antilogous Blood Transfusion practices.

UNIT-III: Blood Donation (5 Lectures)

- Blood donor requirements, Criteria for selection & rejection, Medical history & personal details, Self-exclusion, Health checks before donating blood, Screening for TTI.

UNIT-IV: Blood Collection (5 Lectures)

- Blood collection packs.
- Anticoagulants.
- Taking & giving sets in Blood transfusion
- Adverse donor reaction.

UNIT-V: Testing Donor Blood (5 Lectures)

- Screening donor's blood for infectious agents - HIV, HCV, HBV, T. palladium, Plasmodium, HTLV.

UNIT-VI: Storage & Transport (8 Lectures)

- Storage of blood, Changes in blood after storage, Gas refrigerator, Transportation.

UNIT-VII: Maintenance of Blood Bank Records (5 Lectures)

- Blood donation record book, Recording results, Blood donor card, Blood bank temperature sheet, Blood bank stock sheet, Blood transfusion request form.

UNIT-VIII: Compatibility Testing (8 Lectures)

- Single tube compatibility techniques using AHG reagent, Emergency compatibility testing, Difficulties in cross matching, Labeling & Issuing cross- matched blood.

UNIT-IX: Blood Transfusion Reactions (8 Lectures)

- Investigation of a Transfusion reaction, Hemolytic transfusion reaction.

BLOOD BANK PROCEDURES & HAEMOGLOBINOPATHIES (PRACTICAL)
Course Code: PAT.302P
Credit Hours: 2

- Conducted as per theory syllabus

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

PHARMACOLOGY RELATED TO DIALYSIS TECHNOLOGY (THEORY)
Course Code: PHR.303T
Credit Hours: 4
Semester: IV

- IV fluid therapy with special emphasis in renal diseases. **(4 Lectures)**
- Diuretics: classification, actions, dosage, side effects & contraindications. **(5 Lectures)**
- Anti hypertensives: classification, actions, dosage, side effects & contraindications, special reference during dialysis, vasopressors, drugs used in hypotension. **(7 Lectures)**
- Drugs & dialysis: dose & duration of administrationc of drugs. **(5 Lectures)**
- Dialysable drugs: phenobarbitone, lithium, methanol etc. **(4 Lectures)**
- Vitamin D, phosphate binders, iron, folic acid & other vitamins of therapeutic value. **(7 Lectures)**
- Erythropoietin in detail. **(3 Lectures)**
- Heparin including low molecular weight heparin. **(4 Lectures)**
- Protamine sulphate. **(3 Lectures)**
- Formalin, sodium hypochlorite, hydrogen peroxide: role as disinfectants & adverse effects of residual particles applicable to formalin. **(6 Lectures)**
- Haemodialysis concentrates: composition & dilution (acetate & bicorbonates). **(6 Lectures)**
- Peritoneal dialysis fluid in particular hypertonic solutions: composition. **(3 Lectures)**
- Potassium exchange resins with special emphasis on mode of administration. **(3 Lectures)**

PHARMACOLOGY RELATED TO DIALYSIS TECHNOLOGY (PRACTICAL)
Course Code: PHR.303P
Credit Hours: 2

- Conducted as per theory syllabus

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

SCHEME OF EXAMINATION - PRACTICALS

	Particulars	Marks
INTERNAL	Log Book	10
	Clinical Posting(attendance)	20
	Internal (1st ,2nd Hourly & mid-term)	20
EXTERNAL	Viva-voce	50
	TOTAL MARKS	**100**

HEALTHCARE
Course Code: PMS.305T
Credit Hours: 2
Semester: V

UNIT-I: Introduction to Health (10 Lectures)

- Definition of health, determinants of health, health indicators of India, health team concept.
- National health policy
- National health programmes (Briefly objectives and scope)
- Population of India and family welfare programme in India

UNIT-II: Introduction to Nursing (15 Lectures)

- What is nursing? Nursing principles, inter-personnel relationships.
- *Bandaging:* basic turns, bandaging extremities, triangular bandages and their application.
- Nursing position, prone, lateral, dorsal, dorsal recumbent, Fowler's positions, comfort measures, bed making, rest and sleep.
- *Lifting and transporting patients:* lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher.
- Bed side management: giving and taking bed pan, urinal.
- Observation of stools, urine, sputum
- Use and care of catheters, enema giving.
- *Methods of giving nourishment:* feeding, tube feeding, drips, transfusion.
- Recording of body temperature, respiration and pulse.
- Simple aseptic techniques, sterilization and disinfection.
- *Surgical dressing:* observation of dressing procedures.

UNIT-III: First Aid (15 Lectures)

- Physical Exam and SAMPLE History
- Documentation and Legal Considerations
- Sudden Illness, Bleeding
- Caring for Shock, Burns, Injuries to muscles, bones, and joints, Splints, Bites and Stings
- Administering Epinephrine
- Assisting with bronchodilators (inhalers)
- Heat/Cold Related Emergencies
- In-line stabilization for head, neck and back injuries
- First Aid Kits, Fire & safety

SCHEME OF EXAMINATION - THEORY

Types of Questions	Total No. of Questions	No. of Questions to be attempted	Marks Assigned	Subtotal
SEC -A: MCQ'S	10	10	1	10
SEC -B: Very Short Answer Questions	7	5	2	10
SEC -C: Short Answer Questions	6	4	5	20
SEC -D: Long Answer Questions	2	1	10	10
			TOTAL MARKS	**50**

DIETARY MANAGEMENT OF COMMON DISEASES
Course Code: PMS.306T
Credit Hours: 2
Semester: V

UNIT – I **(10 Lectures)**

- Diet Therapy: Routine hospital diet, Regular diet, Light diet, Soft Diet, Full liquid diet.
- Diet in fevers and infections – Typhoid, Malaria and Tuberculosis.
- Diet in gastro intestinal disorders: Diarrhea, Constipation, Peptic ulcer

UNIT – II **(20 Lectures)**

- Diet in Diabetes mellitus – Classification, predisposing factors, Diagnosis, Dietary management.
- Diet in Cardiovascular diseases – Dietary management in atherosclerosis and hypertension.
- Diet in diseases of liver and gall bladder.
- Diet in Renal diseases
- Dietary Management in glomerulonephritis
- Dietary Management in Acute and chronic renal failure.

SCHEME OF EXAMINATION - THEORY

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			TOTAL MARKS	**50**