1. Embryology & Development
   a) Early Human Development.
   c) Prenatal growth in Form & Size.
   d) Neonatal Anatomy & Growth.

2. Skin
   a) Types of Skin, Epidermis, Dermis, Nerves, Blood vessels.
   b) Appendages of skin: Pilosabaceous Unit, Nail Unit

3. Skeletal System
   a) Morphology of Human Skeleton: The Skeleton in life, Shape and Proportions of Bone,
      Functions of Bone and Skeleton, Mechanical Properties of Bone, Growth of Individual Bones.
   b) Skeletal Connective Tissues: Structure of cartilage, Bone as a Tissue, Microscopic Structure
      and Organization of Bone, Blood Vessels and Nerves of bone.
   c) Types of joints.
   d) Axial Skeleton: Vertebral Column, Ribs, Sternum, and Skull.
   e) Appendicular Skeleton: Upper Limb, Lower Limb.

4. Muscle
   a) Types of Muscle, attachments of skeletal muscle.
   b) Form and Function in Skeletal Muscle: Form and Fibre Architecture, Functional Implications
      of Forms.
   c) Muscle and Movement.
   d) Muscles and Fasciae of Head, Neck, Trunk, Upper limb, lower limb.

5. Nervous System
   a) Regional organization of Central Nervous System: Spinal Cord, Rhomb encephalon,
      Mesencephalon, Diencephalon, Telencephalon, Basal Nuclei, Fluid Compartments and Fluid
      Balance in the CNS.
   b) Peripheral Nervous System: Cranial Nerves, Spinal Nerves, and Autonomic Nervous System,
      Peripheral Apparatus of Special Senses: Gustatory, Olfactory, Peripheral Visual, accessory
      Visual, Auditory, Vestibular.

6. Cardiovascular System
   a) Blood Vessels, Thoracic Cavity and Heart.
   b) Arterial System, Venous System lymphatic.

7. Respiratory System
   a) Nose and Paranasal Sinuses, Larynx, Trachea. Bronchi, lungs, Pleura, Mediastinum.

8. Reproductive System
   a) Reproductive Organs of Male and Female.

Anatomy Lab Hour
   a) Muscles Bones Ligaments, Joint of head, Face, Trunk, Lower and Upper extremities on a
      dissected human specimen.
   b) Gross and Microscopic Anatomy of the Central and Peripheral Nervous System.
   c) Gross Anatomy of Respiratory, Digestive Endocrine, Urinary and Reproductive Systems on a
      dissected human body.
(Section –II)

D.P. Th.1.2 Physiology

PHYSIOLOGY

1. Membrane Physiology, Nerve and Muscle
   Transport of Substances Through the Cell membrane: Diffusion, Active Transport.
   Membrane Potentials and Action Potential: Resting Membrane Potential of Nerves, Nerve Action
   Contraction of Skeletal muscle: Molecular Mechanics of Muscle Contraction, Energetics of Muscle
   Contraction, Characteristics of Whole muscle Contraction, N-M Junction, Muscle AP, Excitation-
   Contraction Coupling.
   Contraction and Excitation of Smooth Muscles.
   Hormonal Control of Smooth Muscle Contraction.

2. Heart and Circulation
   Cardiac Muscle, Cardiac Cycle, Regulation of Heart Pumping, Cardiac Failure
   Normal ECG, Methods of Recording, ECG Leads.
   Heart Sounds.

3. Respiration
   Mechanics of Pulmonary Ventilation, Pulmonary Volumes and Capacities, Alveolar Ventilation,
   Functions of the Respiratory Passageways.
   Pulmonary Circulation, Pulmonary Edema, Pleural Fluid.
   Physical Principles of Gas Exchange, Transport of Oxygen and Carbon dioxide in the blood and Body
   Fluids.
   Regulation of Respiration.
   Respiratory Dysfunction.

4. Nervous System
   a) Sensory receptor, Neuronal Circuits for processing Information.
   c) Special senses.
   e) Cortical and brain stem control of Motor function: The Motor Cortex, Corticospinal Tract,
      Vestibular sensations and Maintenance of Equilibrium.
   f) Cerebellum, Basal Ganglia, Motor Control: Integration of the many parts of the total motor
      control system.
   g) Intellectual Functions of the Brain, Learning and memory.
   i) States of Brain activity: Sleep, Brain Waves, Epilepsy, Psychoses.
   j) Autonomic Nervous System.
   k) Cerebral Blood Flow, CSF and brain Metabolism.

5. Physiology of Exercise and Work.
   a) Neuromuscular activity human movement, Physiological mechanism in movement,
      Behaviour, Strength, Endurance, & analysis of movement.
   b) Circulatory and Respiratory response to exercise including effects on the heart, blood
      circulation, Body fluid changes pulmonary ventilation, Gas exchange and transport, etc.
   c) Effects of exercise and work on the other body functions.
   d) Metabolic and environmental aspects of exercise and work-metabolism, energy requirement,
      efficiency of muscular work, nutritional aspects, heat and body temperature regulation and
      environmental factors.
   e) Effects of exercise training-endurance, fatigue and recovery.
   f) Fitness and health-age, sex, body type, race, stress and medical aspect of exercise.
Paper – II (Section –I)
D.P. Th. 1.3 ‘Pathology And Microbiology
(Pathology: 70%; Microbiology 30%)

PATHOLOGY
Definitions and Causes.
Mechanisms.
Morphology of cell injury.
Apoptosis.
Cellular Adaptations to growth and injury.

2. Acute and Chronic Inflammation.
General features of Inflammation.
Vascular Changes and Cellular Events-Acute Inflammation.
Chemical Mediators of Inflammation.
Definitions, Causes and Histological Features-Chronic Inflammation.

3. Tissue and Cell Repair.
Normal Cell Growth.
Repair by Connective Tissue.
Wound Healing.
Fracture Healing.
Pathological Aspects of Repair

4. Haemodynamic Disorders
Edema, Hyperemia and Congestion, Haemorrhage, Haemostasis and Thrombosis, Embolism, Infarction, Shock.

5. Disorders of Immune System.
Cells of the Immune System.
Autoimmune Disease: Mechanism, RA, SLE, and Myasthenia Gravis.

6. Infectious Diseases.
Categories of Infectious Agents.
Host barriers to Infection.
Immune Evasion by Microbes.

Vascular Wall Cells and their Response to injury.
Arterial Diseases: Arteriosclerosis, Hypertension and Hypertensive Vascular Disease, Buerger’s Disease, Aneurysm.
Venous Disease: Varicose Veins, Phlebothrombosis, and Thrombophlebitis.
Lymphatic Diseases: Lymphangitis, Lymphoedema.

8. Cardiac System.
Principles of Cardiac Dysfunction.
Types of heart Disease: Ischemic Heart Disease, Hypertensive Heart disease, Valvular Heart Disease, Myocardial Heart Disease, Pericardial heart Disease, Congenital Heart Disease.

9. Respiratory System.

10. Urinary and Reproductive System.
Nephritis, Kidney Stones.
Female Genital Tract: Pelvic Inflammatory Disease, Menopause and Postmenopausal Changes, Endometritis, Carcinoma of the Mammary Glands.

11. Musculoskeletal System
Osteoporosis, Osteomyelitis, Osteoarthritis, Gout, Osteoma, Osteosarcoma, Chondroma, Chondrosarcoma, Osteochondrosarcoma, Muscular Dystrophy.

Hydrocephalus, Meningitis, Haematoma, Multiple Sclerosis, Alzheimer’s Disease, Parkinsonism, G.B. Syndrome
Paper – II  Section –II MICROBIOLOGY
Immunology
Infection, Immunity, Antigens, Antibody, Antigen-Antibody Reaction, Complement System, Structure and Function of Immune system, Immune Response, Immunodeficiency Diseases, Hypersensitivity, Autoimmunity, etc.

Bacteriology
Morphology, Nutritional Requirements, Metabolism, Growth, Classification & Identification of Bacteria.
Sterilisation and Disinfection.
Staphylococcus, streptococcus, pneumococcus, neisseria, Corny bacterium, Mycobacterium, pseudomonas, Enterocriaceae, Clostridium, Bacillus

Paper – II (Section-III)

BIOCHEMISTRY
1. Biochemical characteristics living matter
2. Morphology of cell
4. Enzymes.
5. Metabolism of carbohydrates, Lipids, Protein.
7. Dietary balance, Regulation of Feeding, obesity and starvation.
8. Hormones.
10. Water electrolyte and acid base balance.
13. Common procedures used in Biochemistry
B.P. Th. 1.5 Basis of Electrotherapy & Exercise Therapy

Section-I Basis of Electrotherapy

1. Physical principles
   a) Structure and properties of matter-solids liquids and gases, adhesion, surface tension, viscosity, density and elasticity.
   b) Structure of atom, molecules, elements and compounds.
   c) Electron therapy, static and current electricity.
   d) Conductors, Insulators, Potential difference, Resistance and intensity.
   e) Ohm’s law-Its application to AC & DC currents.
   f) Rectifying Devices-Thermionic valves, Semiconductors, transistors, Amplifiers, transducer and Oscillator circuits.
   g) Capacitance, condensers and in DC and Ac circuits.
   h) Display devices and indicators-analogue and digital.

2. Effect of Current Electricity
   a) Chemical effects-Ions and electrolytes, Ionisation, Production of an EMF by chemical actions.
   b) Magnetic effects, Molecular theory of magnetism, magnetic fields, Electromagnetic Induction.
   c) Milli ammeter and voltmeter, transformers and choke coil.
      Electromagnetic spectrum.

3. Electrical Supply
   a) Brief outline of main supply of electric current.
   b) Dangers-short circuit, electric shocks.
   c) Precaution-safety devices, earthing, fuses etc.
   d) First aid and initial Management of electric shock.

   a) Thermal agents: Physical Principles of cold, Superficial and deep heat.
   b) Ultrasound: Physical Principles of Sound.
   c) Electromagnetic Radiation: Physical Principles and their Relevance to Physiotherapy Practice.
   d) Electric Current: Physical Principles and their Relevance to Physiotherapy Practice.

5. Circuit diagrams
   a) SWD
   b) US
   c) MWD
   d) LASER

Section-II Basis of Exercise Therapy

Definitions, Units,Classifications, Effects, and Physiotherapy Application of the Following:

1. Mechanical Basis of Movement

2. Skeletal Basis of Movement
   Planes and Axes, Joint and their Classification, Classification of Movement, Degree of Freedom, Bones and their Classification.

3. Musculoskeletal Basis of Movement
   Structure of Muscle and its Classification, muscle tension, Muscle Fibre, Group Action of Muscles, Torque & angle of Pull.
4. Gravity
Effects, Centre of Gravity, Line of gravity and their alterations Role in human Body and movement.
5. Equilibrium
Effects, Supporting Base, Role in Human Movement.

6. Simple Machines
Levers and their Functions and classification, Pulley and their Functions and classification, Inclined Planes and their Functions and classification.

7. Elasticity
Stress Strain, hook’s Law, springs and their properties.

8. Hydrostatics and Hydrodynamics
Principles, Application.

9. Fundamental and Derived positions

10. Traction
Principles

Section-I Basis of Electrotherapy & Exercise Therapy (Lab Hours)
1. Diode and Triode valves, Transistors, Ammeter, Voltmeter, Galvanometer, Rheostat, Resistance Box, Transformer, etc.
2. Demonstration of circuits in Electrotherapy units like stimulator, SWD, LASER and ultrasound, etc.

Section-II Basis of Exercise Therapy
1. Mechanical Principles applied in Physiotherapy like force, Torque, Centre of Gravity, etc.
2. Demonstration of different types of levers in the human body.
3. Demonstration of different types of pulleys and string use in Physiotherapy.
4. Demonstration of Archimedes’ Principle of floatation and Bernoulli’s Theorem in Hydrotherapy.
5. Demonstration of axial and pendular suspension

Paper – III (Section – II)

B.P. Th. 1.4 Sociology
Consequences of the following social problems in relation to sickness and disability, remedies, to prevent these problems:
a) Population explosion.
b) Poverty and unemployment.
c) Beggary.
d) Juvenile delinquency.
e) Prostitution.
f) Alcoholism.
g) Problems of women in employment.
h) Sociology of health profession.
i) Various perspectives, power and autonomy in professions, women and professions.

Social Security
Social security and social legislation in relation to the disabled
Basis of electrotherapy & Exercise Therapy.
Paper – IV (Section – I)

Second Year

D.P. Th. 2.1 General Medicine including Cardiopulmonary Conditions

I CARDIAC DISEASE
1. Disorder of heart rate, rhythm, and conduction.
2. Ischaemic (Coronary) heart disease.
   Myocardial Infarction.
4. Disease of the heart valves
5. Congenital Heart disease.
6. Disease of the myocardium.
7. Disease of the pericardium.

II Pulmonary Disease
1. Obstructive pulmonary disease.
2. Infections.
3. Tumor of the Bronchus and Lungs.
4. Interstitial pulmonary diseases.
5. Disease of the nasopharynx, larynx, Trachea.
6. Disease of the pleura, diaphragm, Chest wall.

III Skin
1. Signs & symptoms of the skin disease.
2. Skin damage from environmental hazards.
3. Infections, Infestations, insect bites, & stings.
4. Immunologically mediated skin disorders.
5. Skin disorders in AIDS, immunodeficiency & venereal disease.

IV Psychiatry
1. Brief description of epidemiology and etiological factors.
2. Classification of psychiatric disorders.
3. Clinical interview (MSE).
4. Brief description of psychological and physical treatments used.
5. Brief description of clinical syndromes (organic psychiatric disorders, substances abuse, schizophrenia, affective disorders, neurotic, stress related and somatoform disorders, eating disorders, sleeping disorders, sexual dysfunction, puerperal mental disorders personality disorders, factitious disorders).
6. Psychiatric problems in general Hospital, community psychiatry, legal aspects of psychiatry.
B. P. Th 2.2 General Surgery Incl. Cardiopulmonary Conditions.

I General Surgery
1. General Scheme of case taking (history, physical examination, investigations, progress, follow-up, termination).
2. Healing and wound Management.
3. Accident and emergency surgery; warfare injuries.
4. Resuscitation & support (acute & long term).
5. Wound infections.
6. Immunology and organ transplantation.
7. Tumors, cysts, ulcers sinus.
8. Burns.
10. Lymphatics and lymphnodes.

II Surgeries of the thorax, Heart & pericardium.
1. Investigation methods.
2. Cardio-respiratory resuscitation.
3. Thymus.
5. Disease of the pleura.
6. Trachea.
8. Post-operative Pulmonary complications.
10. Mediastinal tumor.
Paper – V (Section – I)

III Gynaecology & Obstetrics
1. History Taking.
2. Terminologies used.
4. Birth control.
5. Reproduction.
6. Placenta and Placental membranes.
7. Foetus.
8. Physiological changes during pregnancy.
11. Foetal skull and maternal pelvis.
15. Complications of pregnancy and labour.
16. Special considerations (previous history of C-section, Rh-elderly primigravida, grand multipara, bad obstetrics history, obesity).
17. Term, newborn infant, low birth weight baby.
18. Disease of the foetus and new born.
20. Special topics (foetal distress, intra-partum foetal monitoring, shock in obstetrics, acute renal failure, blood coagulation disorders, high-risk pregnancy, immunology in obstetrics).
21. Aids to diagnosis in obstetrics.

Paper – V (Section – II)

IV Eye
1. Brief Description of Anatomy and Physiology of the eye.
2. Ophthalmic optics and brief description of examination.
1. Diseases of the eye and adnexa of the eye.
2. Disorders of motility of the eye.
3. Ocular manifestations of the diseases of the nervous system.
4. Brief description of immunopathology of the eye.
5. Preventive Ophthalmology.

V EAR
1. Brief Description of Anatomy and Physiology, peripheral receptors & central neural pathways of auditory and vestibular system.
2. Audiology and acoustics.
3. Brief description of assessment of hearing
5. Assessment of vestibular functions.
6. Disorders of vestibular system.
7. Diseases of the external and middle ear
8. Ostosclerosis.
11. Tumors of external ear, middle ear, and mastoid.
Paper – VI (Section – I)

B.P. Th.2.3 Pharmacology

1. General Pharmacology
   a) Definitions and Routes of Drug Administration.
   b) Pharmacokinetics:
      Transportation across membranes, Absorption, Distribution, Biotransformation, Excretion, Kinetics of elimination.
   c) Pharmacodynamics:
   d) Adverse Drug Effects.

2. System Pharmacology
   a) Drugs Acting on Central Nervous System:
      Anaesthetics, alcohols, alkaloids, Narcotics, neuroleptics.
   b) Hypnotics, anticonvulsants.
   c) Sedatives, stimulants, antianxiety, etc.
   d) Drug acting on peripheral nervous system: skeletal muscle relaxants.
   e) Local Anaesthetics
   f) Drugs acting on the Autonomic Nervous System: Cholinergic & Anticholinergic drugs.
   g) Adrenergic & Antiadrenergic drugs.
   h) Drugs acting on cardiac vascular system.
   i) Drugs acting on the respiratory system.
   j) Drugs acting on the kidney.
   k) Drugs affecting Blood and Blood formation.
   l) Gastrointestinal Drugs.
   m) Antimicrobial Drugs.
   n) Drugs acting on skin and mucous membrane.
   o) Antiseptics, Disinfectants, and Ectoparasiticides.
   p) Chelating agents.
   q) Chemotherapeutic agents.
   r) Hormones and drugs affecting endocrines functions.
   s) Vitamins.
   t) Metabolic and other inorganic compounds.
   u) Immunologic Agents.
   v) Diagnostic agents

Paper – VI (Section – II)

B.P. Th. 2.4 Psychology

1. Definition, Application and methods in psychology.
2. Biology of behaviour.
3. Memory:
   Theories, Long and Short- term memories, forgetting amnesia.
4. Motivation: Theories, Biological and social motives, frustration, and conflict motives, motives to know and be effective.
5. Attitudes:
   Nature and measurement of attitudes, attitude theories, Factors in attitude change, Behaviour and attitudes.
6. Development- A lifespan perspective (infancy, childhood, adolescence, adult, old age)
B.P. Th. 2.5  
Exercise Therapy

1. Introduction to Exercise Therapy
   a) Principles, techniques and general areas of its application. Assessment and its Importance.
   b) Description of fundamental starting positions and derived position including joint positions muscle work, stability, effects and uses.
   c) Introduction to movement including analysis of joint motion, muscle work and neuro- muscular – co-ordination.
   d) Classification of movements. Describe the types, technique of application, indication and contra-indications, effects and use of the following:
      i) Active movement  
      ii) Passive movement
      iii) Active assisted movement  
      iv) Resisted movement
   v) To study the principles, techniques of application indication, contra-indication, precaution, effects and uses of Suspension Therapy.

   a) Principles and applications techniques of muscle testing.
   b) Testing position, procedure and grading of muscles of the upper limb, lower limb and trunk etc.

3. Goniometry
   a) Goniometer and its types.
   b) Principles, techniques and application of goniometry.
   c) Testing position, and measurement of ROM of the joints of upper limbs, lower limbs, lower limbs and trunk.

4. Soft Tissue Manipulation (Therapeutic Massage)
   a) History, various types of soft tissue manipulation techniques.
   b) Physiological effects of soft tissue manipulation on the following systems of the body. Circulatory, Nervous, muscle-skeletal, excretory, respiratory, Integumentary system and metabolism.
   c) Classify, define and describe: - effleurage, stroking, kneading, petrissage, deep friction, vibration and shaking etc.
   d) Preparation of the patient: Effects, uses, indication and contraindications of the above manipulations.

5. Motor Learning & Motor Control
   a) Introduction to motor learning
      a) Classification of motor skills.
   b) Introduction to motor control.
      i) Theories of motor control
      ii) Application
      iii) Learning Environment
      iv) Learning of skill
      v) Instructions and augmented feedback
      vi) Practice conditions.

6. Relaxation & Therapeutic Gymnasium
   a) Relaxation
      b) Describe Relaxation, muscle fatigue, muscle spasm and tension (Mental & Physical).
      ii) Factors contribution to fatigue & tension
      iii) Techniques of Relaxation (local & general)
      iv) Effects, uses and clinical application
      w) Indication and Contraindication.
b) Therapeutic Gymnasium
   a) Set-up of gymnasium & its importance.
   ii) Various equipment in the gymnasium
   iii) Operational skills, effects, & uses of each equipment.

7. Therapeutic Exercises
   a) Principle, classification, techniques, physiological & therapeutic effects, indications & Contraindications of therapeutic exercises.
   b) Assessment & evaluation of a patient (region wise) to plan a therapeutic exercise programme.
   c) Joint Mobility-Etiogenesis of joint stiffness, general techniques of mobilization, effects, indications contraindications & precautions.
   d) Muscle Insufficiency-Etiogenesis of muscle insufficiency (strength, tone, power, endurance and volume) general techniques of strengthening, effects indications, contraindications & precautions.
   e) Neuromuscular in coordination review normal neuromuscular coordination.
      Etiogenesis of neuromuscular in coordination and general therapeutic techniques, effects, indications, contraindications & precautions.
   f) Functional re-education-general therapeutic techniques to re-educate ADL function.

8. Posture, Balance & Gait:
   a) Posture – overview of the mechanism of normal posture.
   b) Abnormal posture – assessment, types, Etiogenesis, management, including therapeutic exercises.
   c) Static & dynamic Balance – assessment & management including Therapeutic exercises.
   d) Gait – overview of normal gait & its components.
   e) Gait-deviations – assessment, types, Etiogenesis, and management, including Therapeutic exercises.
   f) Types of walking aids, indications, effects & various training techniques.

9. Hydrotherapy:
   a) Basic principles of fluid mechanics, as they relate to hydrotherapy.
   b) Physiological & Therapeutic effects of hydrotherapy, including joint mobility, muscle strengthening & wound care etc.
   c) Types of Hydrotherapy equipment, indications contraindications, operation skills & patient preparation.

10. Special Techniques:
    a) Introduction to special mobilization & manipulation techniques, effects indications, effects indications, effects & contraindications.
    b) Conceptual framework, principle of proprioceptive neuromuscular facilitation (PNF) techniques, including indications, therapeutic effects and precautions.
    c) Principles of traction, physiological & Therapeutic effects classification, types, indications, contraindications, techniques of application, operational skill & precautions.
    d) Review normal breathing mechanism, types, techniques, indications, contraindications, Therapeutic effects & precautions of breathing exercises.
    e) Group Therapy – Types, advantages & Disadvantages.
    f) Exercise for the normal person – importance and effects of exercise to maintain optimal health and its role in the prevention of diseases, Types, advantages, disadvantages, indications contraindication and precautions for all age groups.
    g) Introduction to Yoga – Conceptual framework, various “asanas”, the body – mind relationship, effects & precautions.
Paper – VII (Section – II)

B.P. Th. 2.6 Electrotherapy

Production, physiological effects, application techniques, effects, indications, contra-indications, precautions operational skills of equipment, patient preparation of the following:

1. Low Frequency Currents
   a. 1. Introduction to AC, DC and Modified Currents
   b. 2. Production of DC, physiological and therapeutic effects of constant currents
   c. 3. Intophoresis
   d. Modified Direct Current- various pulses, duration and frequency and their effect on nerve and muscle tissue. Production of interrupted and surged current & their effects.
   e. Transcutaneous electric Nerve Stimulation (TENS)
      i. Types of low frequency, pulse widths, frequencies & intensities used as TENS applications.
      ii. Theories of pain relief by TENNS
      iii. Principle of clinical application effects and uses, indications, contraindications, precautions, and operational skills of equipment and patient preparation.

2. Medium Frequency Currents
Interferential therapy

3. Electrical Reactions and Electro-diagnostic tests
   a) 1. Electrical Stimuli and Electrical Properties of Nerve and muscle tissue.
   b) 2. Types of lesion and development of reaction of degeneration
   c) 3. Fradic-intermittent direct current test.
   d) 4. S.D. Curve and its interpretation.
   e) 5. Chronaxie, Rheobase & pulse ration
   f) 6. EMG, NCV test

4. Actinotherapy
   a) Infra red rays-Wavelength, frequency, types and sources of IRR generation, technique of irradiation, physiological and therapeutic effects.
   b) Ultra-violet rays (UVR) generation, technique of irradiation. Physiological & therapeutic effects. Dosimetry of UVR.

5. Thermal Agents
   a) Superficial heat – paraffin wax bath, moist heat, electrical heating pads, mode of heat transfer.
   c) Cryotherapy
   d) Deep heat: SWD, MWD, US.

6. Therapeutic Light in Physiotherapy
Paper – VIII (Section – I)                        Third Year

B.P. Th. 3.1 Orthopaedics & Orthopaedic Surgery

1. Introduction
   a) Introduction to Orthopaedic Terminology.
   b) Clinical examination of an Orthopaedic patient.
   c) Common Investigation.

2. Traumatology
   Definition, Classification, Clinical Features, Differential Diagnosis, Investigations, Medical & Surgical Management of the following:
   a) General Principles
      i) Types of fractures including patterns. Open & Closed fractures and fracture dislocations.
      ii) Differences between dislocation subluxation.
      iii) General and local signs and symptoms.
      iv) Principles of management – Conservative and Surgical.
      i) Prevention and treatment of complications including fracture disease, vokman’s ischaemic contracture, Sudeck’s Atrophy, Carpal Tunnel syndrome. Myositis ossificans, and shoulder hand syndrome.
      ii) Functional Bracing
      iii) Soft Tissue Injuries
   b) Upper Limb Trauma
      i) Enumerate major long bone fractures and joint injuries.
      ii) Enumerate the major soft tissue Injuries.
      iii) Describe their clinical features. Principles of management and complications.
   c) Lower Limb Trauma
      i) Enumerate major long bone fractures and joint injuries.
      ii) Enumerate major spinal fractures and joint injuries.
      iii) Enumerate the major soft tissue Injuries
      iv) Describe their clinical features. Principles of management and complications
   d) Spinal Trauma
   e) Polytrauma
   a) Nerve Injuries
   b) Vascular Injuries

3. Amputations
   b) Outline pre-operative, operative and prosthetic management.
   c) Outline prevention and treatment of complication

4. General Orthopaedics
   a) Congenital Deformities
      Outline the clinical features and management of CTEV, CDH, Flat foot, vertical talus, limb deficiency (radial club hand and femoral, tibial and fibular deficiencies meningomyelocle, Arthrogryposis multiplex congenital and Osteogenesis imperfecta, Congenital Torticillis, Spina bifida, Sprengel,s Shoulder, etc.
   b) Developmental Disorders of Bone
      Outline the clinical features and management of Cartilage Dysplasia and Bonyh Dyhsplasia.
   c) Infecations of Bones and Joints
      Outline the Clinical Features, Pathogenesis, Investigations, Differential Diagnosis and Management of Osteomyelitis, Pyogenic Arthritis, Septic Arthritis, etc.
   d) Tuberculosis of Bone and Joints
      Outline the Clinical Features, Pathogenesis, Investigations, Differential Diagnosis and Management of spine, Hip, Knee, SI Joint, Poncet’s Tuberculosus Rheumatism, Tubercular Osteomyelitis, etc.
e) Bone Joint tumours
Classify and outline the clinical features, management and complication of the following
(benign/malignant bone and joint tumours, osteomas, osteomarcams, osteoclastomas, Eqintg’s
sarcoma, multiplemyeloma.

f) Generalised Diseased of Bone
Outline the Clinical Features, Pathogenesis, Investigations, Differential Diagnosis and Management
of Metabolic and Endocriintal Diagnosis, Pageat’s Disease, Sicklee cell Anemia, etc.

g) Diases of Joints
Outline the Clinical Features, Pathogenesis, Investigations, Differential Diagnosis and Management
of Osteoarthritis, Rheumatoid arthritis, Ankllosis, Reiter’s Diseases, gout, Pseudo-Gout, Psoriatic
Arthritis, Hysterical Joint, etc.

h) Neurological and Muscular Diseases
Outline the Clinical Features, Pathogenesis, Investigations, Differential Diagnosis and Management
of Cerebral Palsy, Poliomyelitis, Muscular Dystrophies and Leprosy.

5. Regional Orthopedics
Outline the Clinical Features, Pathogenesis, Investigations, Differential Diagnosis and Management
of the following conditions:

a) Shoulder
   Tendinitis, Peri Arthritis, Rotator Cuff Injury, Deltoid Fibrosis, Adhesive Capsulitis, Frozen
   Shoulder, etc.

b) Elbow
   Tennis Elbow, Golfer’s Elbow, Recurrent Slipping of Ulnar Nerve, Pulled Elbow, etc.

c) Wrist and Hand
   Ganglion, DeQuervain’s Disease, Trigger Thbumb and Finger, Carpal Tunnel Syndrome, Dupuytren’s
   Contraction, etc.

d) Spine
   Cervical: Brachial Neuralgia, Brachial Plexus Injury, Thoracic Inlet Syndromes, Tiorticollis,
   Cervical Spondylitis, IPD, etc. Thoracic and Lumbar Spine: Deformities of the spine,
   spondylosisthesis, Lumbar canal stenosis, Spondylitis, PID, etc.

e) Hip
   Coxa Vara, Slipped Upper Femoral Epiphysis, AVN, etc.

f) Knee
   Deformities, Quadriceps fibrosis, Recurrent Dislocation of the Patella, Osgood Schlatter’s Disease,
   Loose Bodies, Anterior knee Pain, Chondromalacia Patellae, etc.

g) Foot and ankle
   Painful Heel, Plantar fascitis, Posterior Heel Pain, Deformities, Forefoot pain, metatarsalgia, Tarsal
   Tunnel Syndrome, etc.

h) Peripheral Nerve Injuries
   Outline the Clinical Features and Management of, including reconstructive surgery of:
   Radial, median and ulnar nerver lesions.
   Sciatic and lateral popliteal lesions
   Brachial Plexus injuries including Erb’s, Klumpke’s sand crutch palsy.

6. Special Surgical Techniques
General Principles and Applications of the followings:

   a) Arthrodesis and Arthroplasty
   b) Tendon Transfer
   c) Muscle Lengthening
   d) Tenotomy
   e) Tendon repair
   f) Osteotomy
   g) Nerve Suturing
   h) Discectomy
   i) Spinal fusion
   j) Laminectomy
   k) Soft tissue Release
Paper – IX (Section – I)

B.P.Th. 3.2 Biomechnics & Kinesiology

1. Mechanics
   a) Introduction to mechanics including motion, forces, parallel forces system vectors.
   b) Newton’s law of motion, concurrent force system—composition forces, muscle action line etc.
   c) Centre of Gravity, line of gravity, stability and equilibrium, law of inertia.
   d) Levers, torque, mechanical advantage.
   e) Moment arm, and anatomic pulleys.

2. Joint structure and Function
   a) Basic principles of joint design and a human joint.
   b) Tissues present in human joint including dense fibrous tissue, bone, cartilage and connective tissue.
   c) Classification of joints.
   d) Joint function, Kinematics chains and range of motion
   e) General effects of injury and disease
   f) Recall anatomy and study the biomechanics of the spine, shoulder girdle, joints of the upper extremity, pelvic girdle and the joints of the lower extremity.

3. Muscle Structure and Function
   a) Mobility and stability functions of muscle
   b) Elements of muscles structure and its properties.
   c) Factors affecting muscle tension
   d) Types of muscle contraction and muscles work.
   e) Classification of muscles and their functions.
   f) Group action of muscles, co-ordinated movement.

4. Postures and Gait
   a) Posture: Definition, factors responsible for posture, relationship of gravity on posture postural in balance; factors responsible for in balance in static and dynamic positions including ergonomics.
   b) Description of normal gait, determinants of gait, spatio temporal features, and analysis
   c) Gait division: Types, causative factors and analysis.

5. Regional Structure and Function
   a) The Vertebral Column.
   b) Shoulder Complex
   c) Elbow Complex
   d) Wrist and hand complex
   e) Hip Complex
   f) Knee complex
   g) Ankle and Foot Complex.
B.P. Th. 3.3 Community & Rehabilitation Medicine

1. Conceptual framework of Rehabilitation, definitions, and various models or rehabilitation.
2. Epidemiology of Disability with emphases on locomotor disability, its complications on the individual, family, Society, economy and the state.
   Describe the following communicable diseases with reference to reservoir, mode of transmission, route of entry and level of prevention. (Poliomyelitis, Meningitis & Encephilitis, Tuberculosis, Filariasis leprosy, Tetanus, Measles);
   Epidemiology of Rheumatic heart disease, cancer, chronic degenerative disease and cerebrovascular accidents.
3. Outline the influence of nutritional factors such as Protein Energy Malnutrition, Anaemia, Vitamin and mineral deficiency on disability. Preventive aspects of disability and organizational skills to manage it.
   Define occupational health and list methods of prevention of occupational diseases and hazards.
4. Physical restorative services
5. Education of the persons with disabilities.
6. Vocational Rehabilitation.
7. Community Based Rehabilitation and Out-Reach programs to rehabilitate persons with disabilities living in rural areas.
   Define community based and institution based rehabilitation.
   Describe the advantage and disadvantage of institution and community-based rehabilitation.
8. Statutory provisions, schemes of assistance to persons with disability.
10. Legislative support for Rehabilitation.
    Outline the Employees State insurance scheme and its various benefits.
    Describe the social security measures for protection from occupational hazards, accidents, diseases, and the workman’s compensation act.
    List the principles of health education, methods of communication and role of health education in rehabilitation services.
12. Basic Principles of administration and finance including personnel management and budget preparation and procurement etc.
13. Role of technology and manpower for rehabilitation.
14. Outline selected national health Programs.
15. Description of roles of members of the Rehabilitation Team.
   a) Physician
   b) Occupational Therapist and Physiotherapist.
   c) Clinical Psychologists
   d) Social Worker
   e) Prosthetic and Orthotic Engineers
   f) Audiologists and Speech Therapists
   g) Hearing aid and ear mould technicians.
   h) Orientation and Mobility Instructors.
   i) Teachers for various categories of children with disabilities.
   j) Vocational instructors, Counselors and placement Officers.
   k) Multi-purpose rehabilitation workers.
   l) The Family.
B.P. Th. 3.4 Physiotherapy in Medical Conditions including Cardiopulmonary Conditions.

1. Review of the Pathological Changes and principles of management by Physiotherapy in the following conditions:
   a) Diabetes Mellitus
   b) Oncology
   c) Geriatric Medicine.
   d) Inflammation acute, Chronic and Suppurative.
   e) Edema – Traumatic, Obstructive, paralytic, edema due to poor muscle and laxity
   f) Common condition of skin – Acne, Psoriasis, Alopecia, Leucoderma, Leprosy.
   g) Deficiency Diseases – Rickets, Diabetes, Obesity, Osteoporosis & other efficiency disorders related to Physiotherapy.
   h) Psychiatric Disorders – Psychosis, Psychoneurosis, Senile dementia.

2. Cardiac Disease
   a) Review of anatomy and Physiology of the cardiovascular system.
   b) Knowledge of various investigative procedures (invasive & non-invasive) used in the diagnosis of various cardiovascular disorders.
   c) Review of the pathological changes and principles of management by physiotherapy of the following conditions:
      i) Disorder of the heart rate, rhythm, and conduction.
      ii) Ischaemic (Coronary) heart Disease.
      iii) Myocardial Infarction.
      iv) Vascular Disease.
      v) Disease of the heart valves.
      vi) Conginital heart Disease.
      vii) Disease of the Myocadium.
      viii) Disease of the pericardium.

3. Pulmonary Disease.
   a) Review of mechanism of normal respiration.
   c) Chest examination, including auscultation, percussion.
   d) Knowledge of various investigation procedures (invasive & non-invasive) used in the diagnosis of the following respiratory disorders:
      i) Obstructive Pulmonary Disease.
      ii) Infections.
      iii) Tumors of the Bronchus and Lungs.
      iv) Interstitial pulmonary diseases.
      v) Diseases of the nasopharynx, larynx, trachea.
      vi) Diseases of the pleura, diaphragm, chestwall.

4. Special Considerations.
   a) Problems of elderly
      i) Medical, Sensory motor, cognitive falls.
      ii) Failed and Instutionalised elder
      iii) Functional Assessment of the elderly.
   b) Postural drainage.
   c) Breathing Exercise.
   d) Ventilators
   e) Humidification.
Paper – X (Section -II )

B.P. Th. 3.5 Physiotherapy in Surgical Conditions including Cardiopulmonary Conditions

1. Cardio Thoracic Surgery
   Review of the Pathological changes and principles of pre and postoperative Management by Physiotherapy of the following conditions:
   a) Lobectomy, Pneumonectomy, Thoractomy, Thoracoplasty, Endoscopic and eye hole Surgeries.
   b) Diseases of the pleura.
   c) Diseases of the lung, Trachea and Bronchi.
   d) Post – operative pulmonary complications.
   e) Diaphragmatic Surgeries.
   f) Cardiac Surgeries (extracardia, closed intracardiac, open cardiac operations).
   g) Congenital Heart Diseases.
   h) Acquired Heart Disease.
   i) Aortic aneurysm.
   j) Cardio thoracic trauma.
   k) Resuscitation & support (acute & long term).
   l) Arterial & Venous disorders.
   m) Cardio – respiratory resuscitation.
   n) Chest injuries.
   o) Diseases of the Chest wall.
   p) Mediastinal tumours.
   q) Heart lung transplantation.
   r) Mechanical circulatory support.

2. General Gynaecology and Obstetrics and ENT.
   Review of the pathological changes and principles of pre and postoperative management by Physiotherapy of the following conditions:
   a) Common abdominal surgeries, including GIT, liver, spleen, kidney, bladder,etc.
   b) Common operation of reproductive system, including surgical intervention in child delivery. Ante natal and post natal Physiotherapy management.
   c) Common operations, of ear, nose throat and jaws as related to physiotherapy.
   d) Common organ transplant surgeries – heart, liver, bone marrow, etc.

3. Wounds, Burns and Plastic Surgery:
   Review of the pathological changes and principles of pre and postoperative management by Physiotherapy of the following conditions:
   a) Wounds, Ulcers, Pressure sores.
   b) Burns and their complications.
   c) Common reconstructive surgical procedures for the management of wounds, ulcers, burns and consequent contractures and deformities.
Paper – X (Section – III)

B.P. Th. 3.6  Physiotherapy in sports Medicine
1. Introduction to Exercise testing.
2. Introduction to body Composition Analysis.
3. Basic principles of conditioning, Resistant Training, Exercise Physiology, Functional Rehabilitation.
4. Introduction to applied Biomechanics in Tennis, Running, Swimming.
5. Introduction to protective gear used for spine, upper limb and lower limb.
6. The Athlete with a disability.
7. Mechanism, prevention, assessment and Physiotherapy and medical management of:
   Spinal injury, Upper limb injury, and lower limb injury.
10. Sports massage.
11. Introduction to Emergency care of a sports person.
Paper – XI (Section – I)

B.P. Th. 4.1 Neurology & Neurosurgery

1. History taking and Clinical Examination, Brief Description of the Investigations of the Nervous System, Clinical presentation, Diagnostic approach, Relevant Neuro Anatomy and Neurophysiology of the following conditions:
   a) Headache.
   b) Meningitis.
   c) Raised intracranial pressure
   d) Coma and impaired conscious level, transient loss of consciousness.
   e) Confusional states and delirium.
   f) Epilepsy.
   g) Disorder of sleep.
   h) Higher cortical dysfunction.
   i) Disorder of memory.
   j) Disorder of speech and language.
   k) Dementias.
   l) Impairment of vision.
   m) Disorder of smell.
   n) Pupillary disorders, Diplopia disorders of gaze.
   o) Facial pain and sensory loss, Bells palsy and other facial nerve disorders.
   p) Deafness, Tinnitus and vertigo.
   q) Disorders of lower cranial nerves.
   r) Causes of lower cranial nerve palsies.
   s) Cerebellar dysfunction.
   t) Nystagmus.
   u) Tremor amd myoclonus.
   v) Disorders of stance and gait.
   w) Limb weakness and sensory impairment.
   x) Pain.
   y) Outcome after brain damage.
   z) Brain death.

2. Localized Neurological disease and its management.
   1. Intracranial
      a) Head injury.
      b) Chronic subdural haematoma.
      c) Crebrovascular disease and TIA’s
      d) Disease of the vessel wall.
      e) Disease of the blood.
      f) Venous thrombosis.
      g) Intracerebral and subarachnoid Haemorrhage.
      h) Cerebral aneurysms.
      i) Arteriovenous malformations.
      j) Tumors.
      k) Intracranial abscess.
      l) Movement disorder.
      m) Hydroceohalus.
      n) Benign intracranial hypertension.
      o) Chiari malformation.
      p) Dandy – Walker malformation.
      q) Craniosynostosis.
      r) Brief decription of stereotactic, image – guided stereotaxy, psychosurgery
2. Spinal Cord and Roots.
   Compression, prolapse and Spondylosis, stenosis, trauma, vascular
diseases and dysraphism.

3. Peripheral nerve and muscle.
   a) Mononeuropathies, polyneuropathies, and plexus syndromes.
   b) Autonomic Nervous System dysfunction.
   c) Bladder, Bowel and sexual function.
   d) Muscular dystrophies.
   e) Myopathies.
   f) Mitochondrial disorders.
   g) Myasthenia gravis.

4. Multi focal Neurological disease and management.
   a) Infections
   b) Demyelinating diseases.
   c) Drug-induced neurological syndromes.
   d) Metabolic encephalopathies.
   e) Nutritional disorders.
   f) Non-metastatic manifestation of malignant disease.
   g) Degenerative disorders.
   h) Neurocutaneous syndromes.

Paper – XI (Section – II)

1. B.P. Th. 4.3 Physiotherapy Ethics.
   i) History of Physiotherapy.
   j) Philosophy of Physiotherapy.
   k) Major Ethical principles applied to moral issues in health care.
   l) Rules of professional conduct and scope of practice.
   m) Relationship with patient.
   n) Relationship with medical.
   o) Relationship with the profession.
   p) Confidentiality and responsibility.
   q) Provision of services and advertising.
   r) Sale of goods.
   s) Professional and government licensing accreditation and education standards.
   t) Laws and legal concepts.
   u) Law protection from malpractice claim.
   v) Consumer protection act, liability and documentation.

2. B.P. Th. 4.4 Computer Application
   1. Various components of personal computers
   2. Working knowledge of hardware and software
   3. Operational skill of common computer applications, including work processing and spreadsheet
      software.
   4. Basic knowledge of utility of multimedia
   5. Skill of web surfing for literature research relevant to the field of medicine.
1. Introduction
   a) Assessment of the patients
   b) Setting of Treatment Goals and Plans

2. Traumatology
   a) General Physiotherapy approach
   b) Effects of different therapeutic modalities in various traumatic conditions.
   c) Principles of fracture management including Physiotherapy at different stage.
   d) Prevention and management of complication of fractures.
   e) Dislocations fractures and Soft Tissue Injuries; Sings, symptoms, common sites, assessment and physiotherapeutic management.
      i) Upper limb Trauma
      ii) Lower Limb Trauma
      iii) Spinal trauma
   f) Assessment, Management and Treatment Goals of amputation Levels of Amputation, Stump Care , Bandaging, pre and Post prosthetic Management, prosthetic Checkout, Complications and their Management, etc.

3. General Orthopaedics
   Review of the Condition, Assessment, Management and Treatment Goals and plans for the following Conditions
   a) Congenital deformities:
      Torticollis Thoracis inlet Syndrome,
      CTEAV, foot deformities. Developmental dysplasia of the hip, etc.
   b) Acquired Deformities:
      Deformities of spine, knee, shoulder, hip, hand etc., VIC
   c) Bone & joint tuberculosis
   d) Diseases of the Joints:
      osteoarthritis, rheumatoid arthritis, ankylosing spondylitis, Reiter’s disease, Gout.

4. Regional Orthopaedics
   Review of the Condition, Assessment, Managemnt and Treatment and plans for the following Conditions:

   a) Shoulder; Tendinitis, Peri Arthritis, Rotator Cuff Injury, Deltoid Fibrosis, Adhesive Capsulitis, Frozen Shoulder, etc.
   b) Elbow: Tnnis Elbow, golfer’s elbow, Recurrent Slipping of Ulnar Nerve, Pulled elbow, etc.
   c) Wrist and Hand: Ganglion, DeQuervain’s Disease, Trigger Thumb and Finger, Carpal Tunel syndrome, Dupuytren’s contracture, etc.
   d) Spine: Cervical: Brachial Neuralgia, Brachial Plexus Injury, Thorcis Inlet syndromes, Torticollis, Cervical Spondylitis, PID, etc., Thoracic and Lumbar spine: Deformities of the spine, spondyholisthesis, Lumbosarcal Strain, Lumbar Canal stenosis, spondylitis, PID, etc.
   e) Hip: Coxa Vara, Slipped Upper Femoral Epiphiysis, AVN, etc.
   f) Knee: Deformities, Quadriceps Fibrosis, Recurrent Dislocation of the Patella, Osgood Schlatter’s Disease, Loose Bodies, Anterior knee Pain, Chondromalacia Patellae, etc.
   g) Foot and Ankle: Painful Heel, Plantar Fasciitis, Posterior Heel Pain, Deformities, Forefoot pain, metatarsalgia, Tarsal Tunnel Syndrome, etc.
   h) Peripheral Nerve Injuries: Outline the clinical features and management, including reconstructive surgery; Radial, median and ulnar nerve lesions, Sciatic and lateral poplitaler lesions, Brachial Plexus injuries including Erb’s , Klumpke’s sand crutch palsy.
5. Orthopaedic Surgery
pre and postoperative assessment and management of surgeries like:
a) Osteotomy, Arthrodesis, Arthroplasty, joint replacements.
b) Tendon transplant, soft tissue release, Grafting.
c) Spinal stabilization, Reattachment of limbs, illizarov’s techniques.

6. Prosthetics & Orthotics
a) Introduction.
b) Upper limb prosthesis and its rehabilitation.
c) Lower limb prosthesis and its rehabilitation.
d) Upper limb orthoses and its rehabilitation.
e) Lower limb orthoses and its rehabilitation.
f) Spinal orthos rehabilitation and its

Paper – XII (Section – II)

B.P. Th. 4.6 Physiotherapy in Neurology & Neurosurgery.

Review of the pathological changes and principles of management by Physiotherapy in the following conditions;

1. a) Headache.
b) Meningitis.
c) Raised intracranial pressure
d) Coma and impaired conscious level, transient loss of consciousness.
e) Confusional states and delirium.
f) Epilepsy.
g) Disorder of sleep.
h) Higher cortical dysfunction.
i) Disorder of memory.
j) Disorder of speech and language.
k) Dementias.
l) Impairment of vision.
m) Disorder of smell.
n) Pupillary disorders, Diplopia disorders of gaze.
o) Facial pain and sensory loss, Bells palsy and other facial nerve disorders.
p) Deafness, Tinnitus and vertigo.
q) Disorders of lower cranial nerves.
r) Causes of lower cranial nerve palsies.
s) Cerebellar dysfunction.
t) Nystagmus.
u) Tremor and myoclonus.
v) Disorders of stance and gait.
w) Limb weakness and sensory impairment.
x) Pain.
y) Outcome after brain damage.
z) Brain death.
2. **Localized Neurological disease and its management.**
   a) Head injury.
   b) Chronic subdural haematoma
   c) Cerebrovascular disease and TIA’s
   d) Disease of the vessel wall
   e) Disease of the blood
   f) Venous thrombosis
   g) Intracerebral and subarachnoid Haemorrhage
   h) Cerebral aneurysms
   i) Arteriovenous malformations
   j) Tumors.
   k) Intracranial abscess
   l) Movement disorder
   m) Hydroceohalus
   n) Benign intracranial hypertension
   o) Chiari malformation
   p) Dandy – Walker malformation
   q) Craniosynostosis.
   r) Brief description of stereotactic, image – guided stereotaxy, psychosurgery.

3. **Spinal Cord and Roots.**
   Compression, prolapse and Spondylosis, stenosis, trauma, vascular diseases and dysraphism.

4. **Peripheral nerve and muscle.**
   h) Mononeuropathies, polyneuropathies, and plexus syndromes.
   i) Autonomic Nervous System dysfunction.
   j) Bladder, Bowel and sexual function.
   k) Muscular dystrophies.
   l) Myopathies.
   m) Mitochondrial disorders.
   n) Myasthenia gravis.
   o) ...

5. **Multifocal Neurological disease and management.**
   a) Infections
   b) Demyelinating diseases.
   c) Drug-induced neurological syndromes.
   d) Metabolic encephalopathies.
   e) Nutritional disorders.
   f) Non-metastatic manifestation of malignant disease
   g) Degenerative disorders.
   h) Neurocutaneous syndromes.

6. **Special Considerations:**
   a) NDT approaches – Bobath, Rood.
   b) Issues in Motor Control, Motor Learning & Motor Development.