Government of Karnataka

PARA MEDICAL BOARD

Revised Syllabus

of

I,II & III Year Diploma in

Physiotherapy

2017
Who is an Allied and Healthcare Professional?
The Ministry of Health and Family Welfare, accepted in its entirety the following definition of an allied and healthcare professional based on the afore-mentioned report:

“Allied and healthcare professionals (AHPs) includes individuals involved with the delivery of health or healthcare related services, with qualification and competence in therapeutic, diagnostic, curative, preventive and/or rehabilitative interventions. They work in multidisciplinary health teams in varied healthcare settings including doctors (physicians and specialist), nurses and public health officials to promote, protect, treat and/or manage a person’s physical, mental, social, emotional, environmental health and holistic well-being.’

Primary care refers to the work of health professionals who act as a first point of consultation for all patients within the health care system. Such a professional would usually be a primary care physician, such as a general practitioner or family physician, a licensed independent practitioner such as a physiotherapist, or a non-physician primary care provider (mid-level provider) such as a physician assistant or nurse practitioner. Depending on the locality, health system organization, and sometimes at the patient’s discretion, they may see another health care professional first, such as a pharmacist, a nurse (such as in the United Kingdom), a clinical officer (such as in parts of Africa), or an Ayurvedic or other traditional medicine professional (such as in parts of Asia). Depending on the nature of the health condition, patients may then be referred for secondary or tertiary care.

Since the past few years, many professional groups have been interacting and seeking guidance on all those who would qualify under the purview of “allied and healthcare professionals”. In the healthcare system, statutory bodies exist for clinicians, nurses, pharmacists and dental practitioners; but a regulatory structure for around 50 professions is absent in India. Currently, the Government is considering these professions under the ambit of the allied and healthcare system. However, this number is subject to changes and modifications over time, particularly considering how quickly new technologies and new clinical avenues are expanding globally, creating newer cadres of such professionals.

Scope of the allied and healthcare practice varies from one end to another, including areas of work listed below:
- Across the age span of human development from neonate to old age;
- With patients having complex and challenging problems resulting from systemic illnesses such as in the case of diabetes, cardiac abnormalities/conditions and elderly care to name a few;
- Towards health promotion and disease prevention, as well as assessment, management and evaluation of interventions and protocols for treatment;
- In a broad range of settings from a patient's home to community, primary care centers, to tertiary care settings; and

- With an understanding of the healthcare issues associated with diverse socio-economies and cultural norms within the society.

Learning goals and objectives for allied and healthcare professionals
The handbook has been designed with a focus on performance-based outcomes pertaining to different levels. The learning goals and objectives of the undergraduate and graduate education program will be based on the performance expectations. They will be articulated as learning goals (why we teach this) and learning objectives (what the students will learn). Using the framework, students will learn to integrate their knowledge, skills and abilities in a hands-on manner in a professional healthcare setting. These learning goals are divided into nine key areas:
1. Clinical care
2. Communication
3. Membership of a multidisciplinary health team
4. Ethics and accountability at all levels (clinical, professional, personal and social)
5. Commitment to professional excellence
6. Leadership and mentorship
7. Social accountability and responsibility
8. Scientific attitude and scholarship (only at higher level- PhD)
9. Lifelong learning

Learning methodologies
With a focus on self-directed learning, the curriculum will include a foundation course that focuses on communication, basic clinical skills and professionalism; and will incorporate clinical training from the first year itself. It is recommended that the primary care level should have sufficient clinical exposure integrated with the learning of basic and laboratory sciences. There should also be an emphasis on the introduction of case scenarios for classroom discussion/case-based learning.

Healthcare education and training is the backbone of an efficient healthcare system and India's education infrastructure is yet to gain from the ongoing international technological revolution. The report ‘From Paramedics to Allied Health: Landscaping the Journey and way ahead’, indicates that teaching and learning of clinical skills occur at the patient’s bedside or other clinical areas such as laboratories, augmented by didactic teaching in classrooms and lecture theatres. In addition to keeping up with the pace of technological advancement, there has been a paradigm shift to outcome-based education with the adoption of effective assessment patterns. However, the demand for demonstration of competence in institutions where it is currently limited needs to be promoted. The report also mentions some of the allied and healthcare schools in India that have instituted clinical skill centres, laboratories and high-fidelity simulation laboratories to enhance the practice and training for allied and healthcare students and professionals. The report reiterates the fact that simulation is the replication of part or all of a clinical encounter through the use of mannequins, computer-assisted resources and simulated patients. The use of simulators addresses many issues such as suboptimal use of resources and equipment, by adequately training the manpower on newer technologies, limitations for imparting practical training in real-life scenarios, and ineffective skills assessment methods among others. The table mentioned below lists various modes of teaching and learning opportunities that harness advanced tools and technologies.
Assessment methods

Traditional assessment of students consists of the yearly system of assessments. In most institutions, assessments consist of internal and external assessments, and a theory examination at the end of the year or semester. This basically assesses knowledge instead of assessing skills or competencies. In competency-based training, the evaluation of the students is based on the performance of the skills as per their competencies. Hence, all the three attributes – knowledge, skills, and attitudes – are assessed as required for the particular competency.

Several new methods and tools are now readily accessible, the use of which requires special training. Some of these are given below:

- Objective Structured Clinical Examination (OSCE)
- Objective Structured Practi-cal Examination (OSPE)
- Objective Structured Long Examination Record (OSLER)
- Mini Case Evaluation Exercise (CEX)
- Case-based discussion (CBD)
- Direct observation of procedures (DOPs)
- Portfolio
- Multisource feedback
- Patient satisfaction questionnaire

An objective structured clinical examination (OSCE) is used these days in a number of allied and healthcare courses, e.g. Optometry, Physiotherapy, and Radiography. It tests the performance and competence in communication, clinical examination, and medical procedures/prescriptions. In physiotherapy, orthotics, and occupational therapy, it tests exercise prescription, joint mobilization/manipulation techniques; and in radiography it tests radiographic positioning, radiographic image evaluation, and interpretation of results. The basic essential elements consist of functional analysis of the occupational roles, translation of these roles (“competencies”) into outcomes, and assessment of trainees' progress in these outcomes on the basis of demonstrated performance. Progress is defined solely by the competencies achieved and not the underlying processes or time served in formal educational settings. Most methods use predetermined, agreed assessment criteria (such as observation check-lists or rating scales for scoring) to emphasize on frequent assessment of learning outcomes. Hence, it is imperative
for teachers to be aware of these developments and they should suitably adopt them in the allied and healthcare education system.

**Scope of practice**
Physiotherapists plan and administer physiotherapy/rehabilitation treatments independently and also being a part of the multidisciplinary team. The minimum education requirement is often a baccalaureate degree or postgraduate degrees in Physiotherapy. Physiotherapy is an essential part of the health and community/welfare services delivery system. Physiotherapists practice independently of other health care/service providers and also within multidisciplinary rehabilitation/habilitation programmes to prevent, gain, maintain or restore optimal function and quality of life in individuals with loss and disorders of movement. Physiotherapists are guided by their own code of ethical principles. Thus, they may be concerned with any of the following purposes:
1. Promoting the health and well-being of individuals and the general public/society, emphasizing the importance of physical activity and exercise.
2. Preventing impairments, activity limitations, participatory restrictions and disabilities in individuals at risk of altered movement behaviors due to health or medically related factors, socio-economic stressors, environmental factors and lifestyle factors.
3. Providing interventions/treatment to restore integrity of body systems essential to movement, maximize function and recuperation, minimize incapacity, and enhance the quality of life, independent living and workability in individuals and groups of individuals with altered movement behaviors resulting from impairments, activity limitations, participatory restrictions and disabilities.
4. Modifying environmental, home and work access and barriers to ensure full participation in one’s normal and expected societal roles.

**Settings in which physiotherapy is practiced**
Physiotherapy is delivered in a variety of settings which allow it to achieve its purpose. Prevention, health promotion, treatment/intervention, habilitation and rehabilitation take place in multiple settings that may include, but are not confined to, the following:
1. Community based rehabilitation programmes
2. Community settings including primary health care centres, individual homes, and field settings
3. Education and research centres
4. Fitness clubs, health clubs, gymnasia and spas
5. Hospices
6. Hospitals
7. Nursing homes
8. Occupational health centres
9. Out-patient clinics
10. Physiotherapist private offices, practices, clinics
11. Prisons
12. Public settings (e.g., shopping malls) for health promotion
13. Rehabilitation centres and residential homes
14. Schools, including pre-schools and special schools
15. Senior citizen centres
16. Sports centres/clubs
17. Workplaces/companies
## SUBJECTS AND HOURS DISTRIBUTION

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# QUESTION PAPER PATTERN FOR DPT EXAMINATION

## THEORY

**SUBJECTS HAVING MAXIMUM MARKS = 100**
*(Section-A 50 marks and Section-B 50 marks)*

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**SUBJECTS HAVING MAXIMUM MARKS = 50**

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1. Musculo Skeletal Anatomy -(All the topics to be taught in detail)
   a. Anatomical positions of body, axes, planes, common anatomical terminologies (Groove, tuberosity, trochanters etc)
   b. Connective tissue classification.
   c. Bones- Composition & functions, classification and types according to morphology and development.
   d. Joints-definition-classification, structure of fibrous, cartilaginous joints, blood supply and nerve supply of joints.
   e. Muscles – origin, insertion, nerve supply and actions
   f. Upper Extremity :
      ➢ Osteology : Clavicles, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.
      ➢ Soft parts: Breast, pectoral region, axilla, front of arm, back of arm, cubital fossa, front of fore arm, back of fore arm, palm, dorsum of hand, muscles, nerves, blood vessels and lymphatic drainage of upper extremity.
      ➢ Joints : Shoulder girdle, shoulder joint, elbow joints, radio ulnar joint, wrist joint and joints of the hand.
      ➢ Arches of hand, skin of the palm and dorsum of hand.
   g. Lower Extremity
      ➢ Osteology : Hip bone, femur, tibia, fibula, patella, tarsals, metartarsals and phalanges.
      ➢ Soft parts: Gluteal region, front and back of the thigh (Femoral triangle, femoral canal and inguinal canal), medial side of the thigh (Adductor canal), lateral side of the thigh, popliteal fossa, anterior and posterior compartment of leg, sole of the foot, lymphatic drainage of lower limb, venous drainage of the lower limb, arterial supply of the lower limb, arches of foot, skin of foot.
      ➢ Joints: Hip Joint, Knee joint, Ankle joint, joints of the foot.
h. Trunk & Pelvis:
   - Osteology: Cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs
   - Soft tissue: Pre and Para vertebral muscles, intercostals muscles, anterior abdominal wall muscles, Inter-vertebral disc.
   - Pelvic girdle and muscles of the pelvic floor

i. Head and Neck:
   - Osteology : Mandible and bones of the skull.
   - Soft parts : Muscles of the face and neck and their nerve and blood supply-extra ocular muscles, triangles of the neck,
   - Gross anatomy of eyeball, nose, ears and tongue.

SECTION -B   Q P CODE: 4192

2. Regional Anatomy
   a. Thorax (in detail):
      - Cardio – Vascular System
         Mediastinum: Divisions and contents
         Pericardium: Thoracic Wall: position, shape and parts of the heart, conducting System; blood Supply and nerve supply of the heart; names of the blood vessels and their distribution in the body – region wise.
      - Respiratory system
         Outline of respiratory passages
         Pleura and lungs: position, parts, relations, blood supply and nerve supply; Lungs – emphasize on bronchopulmonary segments
         Diaphragm: Origin, insertion, nerve supply and action, openings in the diaphragm.
         Intercostal muscles and Accessory muscles of respiration: Origin, insertion, nerve supply and action.
   b. Abdomen (brief)
      - Peritoneum: Parietal peritoneum, visceral peritoneum, folds of peritoneum, functions of peritoneum.
      - Large blood vessels of the gut
      - Location, size, shape, features, blood supply, nerve supply and functions of the following: stomach, liver, spleen, pancreas, kidney, urinary bladder, intestines, gall bladder.
c. Pelvis:
   - Position, shape, size, features, blood supply and nerve supply of the male and female reproductive system.

d. Endocrine glands:
   - Position, shape, size, function, blood supply and nerve supply of the following glands: Hypothalamus and pituitary gland, thyroid glands, parathyroid glands, Adrenal glands, pancreatic islets, ovaries and testes, pineal glands, thymus.

3. Neuro Anatomy
   a. Organization of Central Nervous system - Spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital system
   b. Cranial nerves
   c. Peripheral nervous system
      - Peripheral nerve
      - Neuromuscular junction
      - Sensory end organs
   d. Central Nervous System
      - Spinal segments and areas
      - Brain Stem
      - Cerebellum
      - inferior colliculus
      - Superior colliculus
      - Thalamus
      - Hypothalamus
      - Corpus striatum
      - Cerebral hemisphere
      - Lateral ventricles
      - Blood supply to brain
      - Basal Ganglia
      - The pyramidal system
      - Pons, medulla, extra pyramidal systems
      - Anatomical integration
**Practicals**

1. Identification of bony prominence, inspection and palpation in the body
2. Demonstration of brain
3. Viva

**Recommended books**

1. SNELL [Richard S], Clinical Anatomy for Medical students: Ed. 5. Little Brown and Company Boston
2. B.D Chaurasia's Human Anatomy – Regional And Applied; Volume I, Volume II And Volume III
1. General Physiology
   a. Cell: Morphology. Organelles: their structure and functions
   b. Transport Mechanisms across the cell membrane

2. Blood
   a. Introduction: Composition and functions of blood
   c. Structure and formation and functions of RBC, WBC, Platelets
   d. Lymph, Haemoglobin
   e. Blood coagulation, bleeding time, clotting time.
   g. Lymph: Composition, formation, circulation and functions.

3. Nerve Muscle Physiology
   c. Neuroglia: Types and functions.
4. Cardiovascular System
   a. Cardiac muscles: Structure and properties
   b. Cardiac Cycle: Definition. Phases of cardiac cycle.
   d. Heart rate, BP and its regulation
   e. Regional Circulation: Coronary, Cerebral and Cutaneous circulation.
   f. Cardiovascular changes during exercise.
   g. Normal ECG
5. Respiratory System
   b. Mechanics of breathing
   c. Chest expansion, Compliance
   d. Pulmonary volumes and capacities
   e. Transport of respiratory gases
   f. Nervous and chemical, control of respiration
   g. Artificial respiration
   h. Respiratory changes during exercise.
   i. Pulmonary function test
   j. Hypoxia and types, Apnea and Dyspnea
6. Digestive System
   a. Introduction
   b. Composition, function and regulation of salivary, gastric, intestinal and biliary secretion
   c. Movements of GI tract
7. Renal System: Introduction, functions, non renal functions, micturation reflex and abnormalities of micturation
8. Endocrine System
   a. Introduction: Major endocrine glands.
   c. Functions of hormones
9. Reproductive System
      Spermatogenesis.
   b. Female Reproductive System: Functions of ovaries and uterus. Pubertal changes
      in females. Oogenesis.
      Menopause.
   e. Pregnancy: Pregnancy tests. Physiological changes during pregnancy. Functions
      of placenta. Lactation. Contraception methods

10. Special Senses
    a. Vision: Introduction: Functions of cornea, iris, pupil, aqueous humor – glaucoma,
       lens – cataract, vitreous humor, rods and cones.
    b. Visual Pathway and the effects of lesions.
    c. Refractive Errors: myopia, hypermetropia, presbyopia and astigmatism.
    e. Audition: Functions of external ear, middle ear and inner ear.
    g. Taste: Taste buds. Primary tastes.

11. Nervous System
    b. Functions of nervous system. Synaptic transmission.
    c. Sensory Mechanism: Sensory receptors: function, classification and properties.
    d. Sensory pathway: The ascending tracts – Posterior column tracts, lateral
       spinothalamic tract and the anterior spinothalamic tract – their origin, course,
       termination and functions. The trigeminal pathway. Sensory cortex. Somatic
       sensations: crude touch, fine touch, tactile localization, tactile discrimination,
       stereognosis, vibration sense, kinesthetic sensations. Pain sensation: mechanism
       pain – referred pain. Gate control theory of pain


g. Cerebellum: Functions.

h. Thalamus and Hypothalamus: Nuclei. Functions. Thalamic syndrome

i. Reticular Formation and Limbic System: Components and Functions.


l. EEG: Waves and features. Sleep: REM and NREM sleep.

m. CSF: Formation, composition, circulation and functions.


o. ANS: Features and actions of parasympathetic and sympathetic nervous system.

12. Physiology of Exercise

a. Effects of acute and chronic exercise on
   - O₂ transport
   - Muscle strength/power/endurance
   - B.M.R./R.Q. Hormonal and metabolic effect
   - Cardiovascular system
   - Respiratory system
   - Body fluids and electrolyte

b. Physiology of Age

**Recommended books**

1. Medical physiology – Sembulingum

2. Concise medical physiology – Chaudhuri Sujit K.

3. Human Physiology – Chatterjee C.C.
SECTION- B: BIOCHEMISTRY

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1. Cell: cellular organelles, their structure and function
2. Protein: definition, classification of amino acids, functional classification of proteins, denaturation
3. Enzymes: definition, classification, properties and clinical importance
4. Lipid chemistry: definition, general classification properties and functions of lipids. Properties and functions of triglycerides, fatty acids, saturated, unsaturated fats, phospholipids and cholesterol
5. Carbohydrate Chemistry: Definition, general classification with examples and functions
6. Vitamins: definition, classification, functions, dietary sources, daily requirement and deficiency disorder
7. Hormones: effects of hormones on various metabolism, hormonal disorders
8. Detoxification
10. Nutrition: balanced diet, nitrogen equilibrium, biological value of protein, nutritional disorders

Recommended books

1. MURRAY [ROBERT KK], Harper’s Bio Chemistry Ed 24, Prentice Hall. 1996
2. DAS [Debajyothi], Biochemistry, Ed. 7, Academic Publishers Calcutta, 1992
BIOMECHANICS

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**Section A**

Q P CODE: 4195

1. Basic Concepts in Biomechanics:
2. Definition of mechanics, force, diagrammatic representation of forces, measurement of forces, classification of force, action of forces, forces acting on human body. Concurrent forces, coplanar and parallel forces. Composition and resolution of forces
3. Kinetics and kinematics, linear and angular motion, axes and planes, Newton’s law, range of movement
4. Momentum, action and reaction, friction, rotation about a pivot, angle of pull of muscle, assistance and resistance of movement
5. Gravity: definition, line of gravity, centre of gravity
6. Equilibrium: definition and types
7. Energy, work and power: potential and kinetic energy, work and power
8. Levers: definition, types and mechanical advantage
9. Elasticity: definition, stress, strain, hooke’s law
10. Springs: properties of springs, springs in series and parallel

**Section B**

Q P CODE: 4196

1. Goniometry, pulley
2. Mechanical principles of equipments seen in the gymnasium like parallel bars, wall bars, static cycle, continuous passive motion, shoulder wheel, shoulder ladder, stair case, suspension apparatus, tilt bed
3. Mobility aids
4. Gait and gait analysis
5. Posture
6. Hand function
7. Biomechanics of the Thorax and Chest wall
8. Biomechanics of the temperomandibular Joint
9. Biomechanics of the vertebral column
10. Biomechanics of the peripheral joints - Shoulder complex, Elbow complex, Wrist and hand complex, Hip complex, Knee complex, ankle and foot complex
Practical:

1. Demonstrate the movements occurring at the joints, the muscles involved, the movements or muscle action produced
2. Goniometry
3. Analysis of posture and gait

Recommended books:

PSYCHOLOGY AND SOCIOLOGY

SECTION A: PSYCHOLOGY

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1. Introduction to psychology
2. Motivation
3. Emotions and forgetting
4. Personality
5. Biology of behaviour
6. Sensory process and perception
7. Intelligence
8. Social psychology

Recommended books:

SECTION B: SOCIOLOGY

1. Introduction to sociology
2. Social groups
3. Family
4. Community
5. Social change
6. Social problems of disabled
7. Population explosion
   a. Poverty and unemployment
   b. Beggary
   c. Juvenile delinquency
   d. Alcoholism
   e. Problems of women in employment
   f. Geriatric problems
   g. Problems of underprivileged.
8. Social worker
Recommended Books

1. Sachdeva and Vidyabushan, Introduction to the study of sociology
2. INDRANI T K, Text Books of Sociology for Graduates Nurses and Physiotherapy Students, JP Brothers, New Delhi, 10

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SECONDD YEAR

PATHOLOGY AND MICROBIOLOGY

SECTION- A: PATHOLOGY  Q P CODE: 5191

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1. Introduction to Pathology
2. Cell injuries:
   a. Reversible cell injury
   b. Irreversible cell injury: Types of Necrosis & Gangrene, Autolysis.
3. Inflammation and Repair
   a. Acute inflammation: features, causes, vascular and cellular events.
   b. Chronic inflammation: Causes, Types, Classification nonspecific and granulomatous with examples.
   c. Repair, Wound healing by primary and secondary union, factors promoting and delaying the process.
   d. Healing in specific site including bone healing.
4. Infectious diseases
   a. Mycobacterial diseases: Tuberculosis, Leprosy and Syphilis.
   b. Poliomyelitis
5. Circulatory Disturbances
   a. Hyperemia/Ischemia and Haemorrhage
   b. Edema: Pathogenesis and types.
   c. Chronic venous congestion: Lung, Liver, Spleen, Systemic Pathology
   d. Thrombosis and Embolism: Formation, Fate and Effects.
   e. Infarction: Types, Common sites.
   f. Shock: Pathogenesis, types, morphologic changes.
6. Growth Disturbances and Neoplasia
   a. Atrophy, Hypertrophy, Hyperplasia, Aplasia, Hypoplasia, Metaplasia, Malformation, agenesis,dysplasia
7. Nutritional Disorders
   a. Protein energy malnutrition: Marasmus, Kwashiorkor, and Vitamin deficiency disorders, classification with specific examples.
8. Hematology
   a. Constituents of blood and bone marrow, Regulation of hematopoiesis.
   b. Anemia: Classification, clinical features & lab diagnosis.
9. Respiratory System
   a. Pneumonia, Bronchitis, Bronchiectasis, Asthma, Tuberculosis, Carcinoma of lungs, Occupational lung diseases
10. Cardiovascular Pathology
c. Ischemic heart Disease: Myocardial infarction.
d. Hypertension and hypertensive heart Disease.

11. Lymphatic System
   a. Diseases of the gall bladder: Cholecystitis, Cholelithiasis, Carcinoma.
   b. Lymphadenitis - Non specific and granulomatous

12. Musculoskeletal System
   a. Osteomyelitis, acute, chronic, tuberculous,
   c. Arthritis: Suppurative, Rheumatoid. Osteoarthritis, Gout

13. Neuropathology
   a. Inflammations and Infections : TB Meningitis, Pyogenic Meningitis, viral meningitis and Brain Abscess, Meningitis, Encephalitis, Tuberculosis

14. Hepato – biliary pathology
   b. Hepatitis: Acute, Chronic, neonatal.
   c. Alcoholic liver disease
   d. Cirrhosis: Postnecrotic, Alcoholic, Metabolic and Portal hypertension Liver abscesses

15. Alimentary tract:
   a. Peptic ulcer, ulcerative lesions of intestine

16. Dermapathology:
   a. Scleroderma, psoriasis, autoimmune disorder

**Recommended books:**
1. Text book of pathology: Harshmohan
2. General systemic pathology: Churchill Livingstone
### Subject Title | Microbiology
---|---
Method Of Assessment | Written

1. **General Microbiology**
   - Definitions: infections, parasite, host, vector, fomite, contagious disease, infectious disease, epidemic, endemic, pandemic, Zoonosis, Epizootic, Attack rate.
   - Routes of infection and spread; endogenous and exogenous infections
   - Sterilization, disinfection and universal precautions in relation to patient care and disease prevention. Definition of asepsis, sterilization, disinfection.
   - Antimicrobials: Mode of action, interpretation of susceptibility tests, resistance spectrum of activity.

2. **Immunology**
   - Antigen, Antibodies, antigen and antibody reactions
   - Humoral immunity and its role in immunity.
   - Cell mediated immunity and its role in immunity.
   - Allergy and hypersensitivity

3. **Outline of common pathogenic bacteria and diseases produced by them**
   - Respiratory tract infection – streptococcus, pneumoccci, c. Diphtheria
   - Enteric infections – salmonclia, sucigella, e. Coli, silriocholera
   - Anaerobic infections
   - Meningitis
   - Urinary tract infection
   - Leprosy and tuberculosis
   - Wound infections
   - Sexually transmitted disease
   - Hospital acquired infections – pseudomonas, staphylococci

4. **Virology: virus infections, with special mention of hepatitis, poliomyelitis**

**Recommended books:**

1. Short text book of Medical Microbiology by Sathish Gupta
2. Text book of Microbiology by Jayaram Panicker
THERAPEUTIC EXERCISE

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SECTION – A  
Q P CODE: 5193

1. Relaxation: Definitions- Muscle Tone, Postural tone, Voluntary Movement, Degrees of relaxation, Pathological tension in muscle, Stress mechanics, types of stresses, Effects of stress on the body mechanism, Indications of relaxation, Methods & techniques of relaxation-Principles & uses: General, Local, Jacobson’s, Mitchel’s, additional methods.


3. Active Movements:

5. **Suspension Therapy: Definition, principles, equipments & accessories, Indications & contraindications, Benefits of suspension therapy, Types of suspension therapy: axial, vertical, pendular, Techniques of suspension therapy for upper limb, Techniques of suspension therapy for lower limb**

6. **Functional Re-education: Lying to sitting: Activities on the Mat/Bed, Movement and stability at floor level; Sitting activities and gait; Lowerlimb and Upperlimb activities.**

7. **Aerobic Exercise: Definition and key terms; Physiological response to aerobic exercise, Examination and evaluation of aerobic capacity – Exercise Testing, Determinants of an Exercise Program, The Exercise Program, Normal and abnormal response to acute aerobic exercise, Physiological changes that occur with training, Application of Principles of an Aerobic conditioning program for patients – types and phases of aerobic training.**

8. **Stretching: Definition of terms related to stretching; Tissue response towards immobilization and elongation, Determinants of stretching exercise, Effects of stretching, Inhibition and relaxation procedures, Precautions and contraindications of stretching, Techniques of stretching.**

SECTION-B Q P CODE: 5194


10. **Balance: Definition, Physiology of balance: contributions of sensory systems, processing sensory information, generating motor output Components of balance (sensory, musculoskeletal, biomechanical) Causes of impaired balance, Examination**
& evaluation of impaired balance, Activities for treating impaired balance: mode, posture, movement, Precautions & contraindications, Types, Balance retraining


13. Walking Aids: Types: Crutches, Canes, Frames; Principles and training with walking aids

14. Massage, History and Classification of Massage Technique, Principles, Indications and Contraindications, Technique of Massage Manipulations, Physiological and Therapeutic Uses of Specific Manipulations

15. Hydrotherapy: Definitions, Goals and Indications, Precautions and Contraindications, Properties of water, Use of special equipments, techniques, Effects and uses, merits and demerits


Practicals:

1. Demonstrate muscle strength using the principles and technique of MMT
2. Demonstrate the techniques for muscle strengthening based on MMT grading
3. Demonstrate the PNF techniques
4. Demonstrate exercises for training co-ordination – Frenkel’s exercise
5. Demonstrate the techniques of massage manipulations
6. Demonstrate techniques for functional re-education
7. Assess and train for using walking aids
8. Demonstrate mobilization of individual joint regions
9. Demonstrate to use the technique of suspension therapy for mobilizing and strengthening joints and muscles
10. Demonstrate the techniques for muscle stretching
11. Assess and evaluate posture and gait
12. Demonstrate to apply the technique of passive movements
13. Demonstrate various techniques of Active movements
14. Demonstrate techniques of strengthening muscles using resisted exercises
15. Demonstrate techniques for measuring limb length and body circumference.

**Recommended books**

1. Therapeutic exercise by Barbara Bandy
2. Therapeutic exercise by Carolyn Kisner
3. Principles of exercise therapy by M.Dena Gardiner
4. Practical Exercise therapy by Hollis Margaret
**ELECTROTHERAPY**

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**SECTION-A**

**Q P CODE: 5195**

Section 1 - Low frequency Currents

1. Basic types of current
   - Direct Current: types, physiological & therapeutic effects.
   - Alternating Current

2. Types of Current used in Therapeutics
   - Modified D.C
   - Faradic Current
   - Galvanic Current
   - Modified A.C
   - Sinusoidal Current
   - Diadynamic Current.


5. Sinusoidal Current & Diadynamic Current in Brief.

6. HVPGS – Parameters & its uses

7. Ionization / Iontophoresis: Techniques of Application of Iontophoresis, Indications, Selection of Current, Commonly used Ions (Drugs) for pain, hyperhydrosis, wound healing.

8. Cathodal / Anodal galvanism.

9. Micro Current & Macro Current

10. Types of Electrical Stimulators
    - NMES- Construction component.
    - Neuro muscular diagnostic stimulator- construction component
    - Components and working Principles


12. TENS: Define TENS, Types of TENS, Conventional TENS, Acupuncture TENS, Burst TENS, Brief & Intense TENS, Modulated TENS. Types of Electrodes & Placement of Electrodes, Dosage parameters, Physiological & Therapeutic effects, Indications & Contraindications.

13. Pain: Define Pain, Theories of Pain (Outline only), Pain Gate Control theory in detail.

Section II - Electro-diagnosis

1. FG Test

2. SD Curve: Methods of Plotting SD Curve, Apparatus selection, Characters of Normally innervated Muscle, Characters of Partially Denervated Muscle, Characters of Completely denervated Muscle, Chronaxie & Rheobase.

3. Nerve conduction velocity studies

4. EMG: Construction of EMG equipment


Section II C - Medium Frequency

1. Interferential Therapy: Define IFT, Principle of Production of IFT, Static Interference System, Dynamic Interference system, Dosage Parameters for IFT, Electrode placement in IFT, Physiological & Therapeutic effects, Indications & Contraindications.

2. Russian Current
Section III - Thermo & Actinotherapy (High Frequency Currents)

1. SWD: Define short wave, Frequency & Wavelength of SWD, Principle of Production of SWD, Circuit diagram & Production of SWD, Methods of Heat Production by SWD treatment, Types of SWD Electrode, Placement & Spacing of Electrodes, Tuning, Testing of SWD Apparatus, Physiological & Therapeutic effects, Indications & Contraindications, Dangers, Dosage parameters

2. Pulsed Electro Magnetic Energy: Principles, Production & Parameters of PEME, Uses of PEME.

3. Micro Wave Diathermy: Define Microwave, Wave length & Frequency, Production of MW, Applicators, Dosage Parameters, Physiological & Therapeutic effects, Indications & Contraindications, Dangers of MWD.


5. IRR: Define IRR, wavelength & parameters, Types of IR generators, Production of IR, Physiological & Therapeutic effects, Duration & frequency of treatment, Indication & Contraindication.


7. LASER: Define LASER. Types of LASER. Principles of Production. Production of LASER by various methods. Methods of application of LASER. Dosage of LASER. Physiological & Therapeutic effects of LASER. Safety precautions of LASER. Classifications of LASER. Energy density & power density [8 Hours]

Section IV – Superficial heating Modalities
1. Wax Therapy: Principle of Wax Therapy application – latent Heat, Composition of Wax Bath Therapy unit, Methods of application of Wax, Physiological & Therapeutic effects, Indications & Contraindication, Dangers.
2. Contrast Bath: Methods of application, Therapeutic uses, Indications & Contraindications.
4. Cyclotherm: Principles of production, Therapeutic uses, Indications & Contraindication
5. Fluidotherapy: Construction, Method of application, Therapeutic uses, Indications & Contraindications.

Practicals:
1. Demonstrate the technique for patient evaluation – receiving the patient and positioning the patient for treatment using electrotherapy.
2. Collection of materials required for treatment using electrotherapy modalities and testing of the apparatus.
3. Demonstrate placement of electrodes for various electrotherapy modalities
4. Electrical stimulation for the muscles supplied by the peripheral nerves
5. Faradism under Pressure for UL and LL
6. Plotting of SD curve with chronaxie and rheobase
7. Demonstrate FG test
8. Application of Ultrasound for different regions-various methods of application
9. Demonstrate treatment techniques using SWD, IRR and Microwave diathermy
10. Demonstrate the technique of UVR exposure for various conditions – calculation of test dose
11. Demonstrate treatment method using IFT for various regions
12. Calculation of dosage and technique of application of LASER
13. Technique of treatment and application of Hydrocollator packs, cryotherapy, contrast bath, wax therapy

14. Demonstrate the treatment method using whirl pool bath

15. Winding up procedure after any electrotherapy treatment method

**Recommended Textbooks**

1. Claytons Electrotherapy by Forster & Plastangs
2. Electrotherapy Explained by Low & Reed
1. Physical fitness:
   a. Concept of health and physical fitness
   b. Assessment of cardio – respiratory functions
   c. Assessment of co-ordination, speed, accuracy of performance
   d. Principles of diet and exercise prescription
   e. Body dimensions and measurement techniques
   f. Training of physical performance and skills
   g. Diet and nutrition – basic principles
   h. Stress and day to day stress management

2. Alternative medicine
   a. Acupuncture: definition, principles, techniques, effects, indications, contraindications and dangers
   b. Introduction to naturopathy
   c. Magnetotherapy
   d. Yogasanas and their scientific studies

3. Sports medicine:
   a. Evaluation of sports
   b. Evaluation of physical, cardio-respiratory, psychosocial aspects of sports

4. Sports and sports injuries:
   a. Introduction
   b. Frequency and site of injury
   c. Etiological factors
   d. Investigations in sports injury
   e. Diagnosis and prognosis

5. Principles of sports injuries and effects of fatigue on play

6. Pharmacology in sports

7. Rehabilitation in sports
PHARMACOLOGY Q P CODE: 5198

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1. General Pharmacology: Introduction, Definitions, Classification of drugs, Sources of drugs, Routes of drug administration, Distribution of drugs, Metabolism and Excretion of drugs Pharmacokinetics, Pharmacodynamics, Factors modifying drug response, Adverse effects.

2. Drugs acting on CNS: Analgesics, antipyretics, narcotics, anti inflammatory, antiepileptic drugs, sedative, hypnotics, tranquillisers, anticonvulsants, stimulants, psychotherapeutics

3. Drugs acting on CVS: antihypertensives, vasoconstrictors, vasodilators, diuretics, mucolytic agents

4. Drugs acting on ANS: cholinergic and anti cholinergic, adrenergic, peripheral muscle relaxants

5. Bronchodilators – drugs used in inhalation therapy

6. Immunological agents

7. Drugs acting on endocrine system: thyroxine, glucocorticoids, insulin, oral hypoglycaemic

Recommended books

1. Lippicott’s Pharmacology.
2. Text book of Medical Pharmacology by Padmaja udaykumar
3. Pharmacology by N.Murugesh

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THIRD YEAR

PHYSIOTHERAPY IN MEDICAL CONDITIONS

SECTION -A: Q P CODE: 6191

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1. Bedside assessment of the patient - Adult & Pediatric
2. Investigations and tests – Exercise tolerance Testing – Cardiac & Pulmonary, Radiographs, PFT, ABG, ECG
3. Review of pathological changes and principles of the treatment by physiotherapy of
   a. Inflammation – acute, chronic and suppurative
   b. Oedema – traumatic, obstructive paraplytic. Oedema due to poor muscle and laxity of the fascia
4. Common conditions of skin: acne, psoriasis, alopecia, lucoderma
5. Common vascular disease: thrombosis, embolism, buerger’s disease, arteriosclerosis, thrombophlebitis, phlebitis, gangrene
6. Principles and techniques of physiotherapy in diseases of respiratory systems: postural drainage, breathing exercises, PNF respiration
7. Physiotherapy management techniques in the following: bronchitis, asthma, bronchiectasis, pulmonary embolism, pulmonary tuberculosis, emphysema, pleurisy, empyema, atelectasis, pneumothorax, bronchopulmonary fistula and other restrictive lung disease
8. Physiotherapy management in the following: Congestive Cardiac Failure, Ischaemic Heart Disease, Hypertension, valvular diseases of heart, congenital heart disease
1. Physiotherapy management of complications common to all operations: pre and post operative physiotherapy
2. Physiotherapy management of: wound, local infections, ulcers, surgical procedures related to PVD, amputation and its management
3. Physiotherapy management on burns
4. General abdominal surgery and its PT management:
   a. Abdominal incisions: pre and post operative physiotherapy
   b. Operations on stomach, intestines: appendicectomy, spleenectomy, cholecystectomy
   c. Operations on abdominal wall: hernia
   d. Operations of genitor urinary system: prostatectomy, nephrectomy
5. Obstetrics and gynaecology and its PT management
   a. Prolapsed of rectum
   b. Antenatal and postnatal training
   c. Complications of pregnancy
   d. Weak abdominal and pelvic floor muscles
   e. Stress incontinence
   f. Prolapsed uterus
   g. Pelvic inflammatory disease
   h. Surgery of the breast radical mastectomy
6. Pre and post operative physiotherapy related to plastic surgery conditions:
   a. Tendon transfer in leprosy, polio – PT management
7. Physiotherapy management in cardio thoracic surgery:
   a. Incision, types, indications and contraindications
   b. Pre and post operative evaluation: principles and techniques of physiotherapy management of heart and vascular surgery
   c. Chest physiotherapy in ICU
d. Pre and post operative physiotherapy management in the following conditions: lobectomy, pneumonectomy, decortication, thoracoplasty, valvotomy and valve replacement, surgery on pericardium, open heart surgery and heart transplant, congenital abnormalities of heart

e. Cardiac and pulmonary rehabilitation

Practical:

1. Bedside case presentations and case discussions

Recommended books:

1. Tidy's physiotherapy.
2. Cash’s Text Book of Chest, Heart, Vascular Disorders for Physiotherapists.
4. Physiotherapy in Obstetrics and Gynecology by Polden
PHYSIOTHERAPY IN TRAUMATOLOGY AND ORTHOPAEDICS

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**SECTION-A**  
**Q P CODE: 6193**

1. PT assessment for Orthopedic conditions

1. Management - Fractures and Dislocations of Upper Limb, Spine and Lower Limb.
4. Amputation - Definition, levels of amputation of both lower and upper limbs, indications, complications.
5. Deformities - clinical features, complications, medical and surgical management of the following Congenital and Acquired deformities.
7. Disease of Bones and Joints: Causes, Clinical features, Complications, Management - medical and surgical of the following conditions:
   a. Infective conditions: Osteomyelitis (Acute / chronic). Brodie’s abscess. TB spine and major joints like shoulder, hip, knee, ankle, elbow etc.
8. Inflammatory and Degenerative Conditions: causes, clinical feature, complications, deformities, radiological features, management - conservative and surgical for the following conditions:
   b. Connective Tissue Disorders- Systemic Lupus Erythematosus, Scleroderma, Dermatomyositis, Poliomyelitis, Mixed connective tissue Disease (MCTD)
12. Regional Conditions: Definition, Clinical features and physiotherapy management of the following regional conditions:
Subacromial Bursitis


    Mallet Finger, Carpal Tunnel Syndrome, Dupuytren’s Contracture.


    Syndrome


**Recommended books:**

1. Tidy’s physiotherapy.
2. Textbook of orthopedics- Cash.
3. Clinical orthopedic rehabilitation- Brotzman
PHYSIOTHERAPY IN NEUROLOGY AND NEUROSURGERY

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SECTION-A  Q P CODE: 6195

1. Classification of neurological involvement depending on level of lesion.
2. Neurological assessment: Principles of clinical diagnosis, higher mental function, assessment of brain & spinal cord function, evaluation of cranial nerves and evaluation of autonomic nervous system.
3. Management of paediatrics disorders: Developmental disorders, Cerebral palsy, Autism, Down’s Syndrome, Hydrocephalus, Chorea, Spina bifida, and syringomyelia
4. Management of Brain and Spinal Cord Disorders: Cerebro vascular Accident, Meningitis, Encephalitis, Head Injury, Brain Tumors, Perceptual disorders, Motor Neuron Disease, and Multiple sclerosis.

SECTION-B  Q P CODE: 6196

7. Assessment and management of Neurological gaits: Quantitative and Qualitative (Kinetic & Kinematics) analysis, List of Problems, short & Long Term goals, Management of following Neurological Gaits - Hemiplegic gait, Parkinson gait, High
step gait, Hyperkinetic gait, Hypokinetic gait, Waddling gait, Scissoring gait, Spastic gait, Choreaform Gait, Diplegic Gait, and Myopathic Gait

8. Pre and Post surgical assessment and treatment following conditions - Spinal disc herniation, Spinal stenosis, Spinal cord trauma, Head trauma, Brain tumors, Tumors of the spine, Spinal cord and peripheral nerves, Cerebral aneurysms, Subarachnoid hemorrhages, epilepsy, Parkinson’s disease, Chorea, Hemiballism, Psychiatric disorders, Malformations of the nervous system, Carotid artery stenosis, Arteriovenous malformations, and Spina bifida

Practicals:

1. Bedside case presentations and case discussions

Recommended books:

1. Tidy's physiotherapy.
2. Cash’s Textbook of Neurology for Physiotherapists
COMMUNITY BASED REHABILITATION

SECTION-A  Q P CODE: 6197

1. Rehabilitation: Definition, Types
2. Community: Definition of Community, Multiplicity of Communities, The Community based approach
3. Introduction to Community Based Rehabilitation: Definition, Historical review, Concept of CBR, Need for CBR, Difference between Institution based and Community based Rehabilitation, Objectives of CBR, Scope of CBR, Members of CBR team, Models of CBR
4. Disability: Definition of Impairment, Handicap and Disability, Difference between impairment, handicap and disability, Causes of disability, Types of disability, Prevention of disability, Screening: Early detection of disabilities and developmental disorders

SECTION-B  Q P CODE: 6198

5. Disability Evaluation: Introduction, What, Why and How to evaluate, Quantitative versus Qualitative data, Uses of evaluation findings
6. Role of Social work in CBR: Definition of social work, Methods of social work, Role of social worker in rehabilitation
7. National District Level Rehabilitation Programme: Primary rehabilitation unit, Regional training center, District rehabilitation center, Primary Health center, Village rehabilitation worker, Anganwadi worker
8. Extension services and mobile units: Introduction, Need, Camp approach
9. Vocational training in rehabilitation: Introduction, Need, Vocational evaluation, Vocational rehabilitation services
10. Screening and rehabilitation of paediatric disorders in the community: Early detection of high risk babies, Maternal nutrition and education, Rehabilitation of Cerebral Palsy, Polio, Downs Syndrome, Muscular Dystrophies etc., Prevention and rehabilitation of mental retardation and Behavioural disorders, Immunization programmes, Early intervention in high risk babies, Genetic counselling
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