

FACULTY OF SPORTS MEDICINE & PHYSIOTHERAPY

SYLLABUS FOR THE BATCH FROM YEAR 2025 TO YEAR 2029

FOR

BACHELOR OF PHYSIOTHERAPY (ANNUAL SYSTEM) PART: I – IV

EXAMINATIONS: 2025-29



GURU NANAK DEV UNIVERSITY AMRITSAR

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**BACHELOR OF PHYSIOTHERAPY (ANNUAL SYSTEM)
SYLLABUS FOR THE BATCH FROM YEAR 2025 TO YEAR 2029**

SCHEME OF EXAMINATION

FIRST YEAR

Sr.No.	Subject	Theory		Practical	
		Marks	Teaching Hours	Marks	Teaching Hours
Paper-I	Human Anatomy	100	150	100	100
Paper-II	Human Physiology	100	150	100	100
Paper-III	Biochemistry	100	100	---	---
Paper-IV	Electrotherapy – I	100	125	100	150
Paper-V	Exercise Therapy – I	100	125	100	150
Paper-VI	Sociology & Community Health	100	100	---	---
Paper-VII	Punjabi Compulsory OR *Mudhli Punjabi OR *Punjab History and Culture (Earliest Times to 1000 A.D.)	100			
Paper-VIII	** Drug Abuse: Problem, Management and Prevention (Compulsory Paper)	50			

***Special Note:**

- ਜਿਹੜੇ ਵਿਦਿਆਰਥੀ **Domicile/Non-Domicile of Punjab** ਹਨ ਅਤੇ ਉਨ੍ਹਾਂ ਨੇ ਅੱਠਵੀਂ/ਦਸਵੀਂ ਜਮਾਤ ਤੱਕ ਪੰਜਾਬੀ ਵਿਸ਼ਾ ਪੜ੍ਹਿਆ ਹੈ, ਉਹ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ (ਲਾਜ਼ਮੀ) ਪੜ੍ਹਨਗੇ।
- ਜਿਹੜੇ ਵਿਦਿਆਰਥੀ **Non-Domicile of Punjab** ਹਨ ਅਤੇ ਅੱਠਵੀਂ/ਦਸਵੀਂ ਜਮਾਤ ਤੱਕ ਪੰਜਾਬੀ ਵਿਸ਼ਾ ਨਹੀਂ ਪੜ੍ਹਿਆ ਹੈ, ਉਹ ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਜਾਂ ਪੰਜਾਬ ਹਿਸਟਰੀ ਐਂਡ ਕਲਚਰ ਵਿੱਚੋਂ ਕੋਈ ਇੱਕ ਵਿਸ਼ਾ ਚੁਣ ਸਕਦੇ ਹਨ।
- ਜਿਹੜੇ ਵਿਦਿਆਰਥੀ **Domicile of Punjab** ਹਨ, ਪੰਤੂ ਕਿਸੇ ਕਾਰਣ ਪੰਜਾਬ ਤੋਂ ਬਾਹਰ ਪੜ੍ਹੇ ਹਨ ਅਤੇ ਉਨ੍ਹਾਂ ਨੇ ਅੱਠਵੀਂ/ਦਸਵੀਂ ਜਮਾਤ ਤੱਕ ਪੰਜਾਬੀ ਵਿਸ਼ਾ ਨਹੀਂ ਪੜ੍ਹਿਆ ਹੈ, ਉਹ ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਦਾ ਹੀ ਵਿਸ਼ਾ ਪੜ੍ਹਨਗੇ।
- ਜਿਹੜੇ ਵਿਦਿਆਰਥੀ **Domicile of Punjab** ਹਨ ਅਤੇ ਪੰਜਾਬ ਦੇ ਕੇਂਦਰੀ ਵਿਦਿਆਲਿਆ ਜਾਂ ਕਿਸੇ ਹੋਰ ਸਕੂਲ ਵਿੱਚ ਪੜ੍ਹੇ ਹਨ ਅਤੇ ਕਿਸੇ ਕਾਰਣ ਉਨ੍ਹਾਂ ਨੇ ਅੱਠਵੀਂ/ਦਸਵੀਂ ਜਮਾਤ ਤੱਕ ਪੰਜਾਬੀ ਵਿਸ਼ਾ ਨਹੀਂ ਪੜ੍ਹਿਆ ਹੈ, ਉਹ ਮੁੱਢਲੀ ਪੰਜਾਬੀ ਦਾ ਵਿਸ਼ਾ ਹੀ ਪੜ੍ਹਨਗੇ।

**** Marks of Drug Abuse: Problem, Management and Prevention will not be included in the Total Marks**

**BACHELOR OF PHYSIOTHERAPY (ANNUAL SYSTEM)
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SECOND YEAR

Sr.No.	Subject	Theory		Practical	
		Marks	Teaching Hours	Marks	Teaching Hours
Paper-I	Pathology & Microbiology	100	125	---	---
Paper-II	Pharmacology	100	100	---	---
Paper-III	Electrotherapy – II	100	100	100	150
Paper-IV	Exercise therapy – II	100	100	100	150
Paper-V	Biomechanics	100	100	---	---
Paper-VI	Psychology	100	150	---	---
Paper-VII	**ESL-222:Environmental Studies (Compulsory Paper)	50	---	---	---

**** Marks of ESL-221: Environmental Studies will not be included in the Total Marks**

**BACHELOR OF PHYSIOTHERAPY (ANNUAL SYSTEM)
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THIRD YEAR

Sr.No.	Subject	Theory		Practical	
		Marks	Teaching Hours	Marks	Teaching Hours
Paper-I	Orthopedics	100	150	100	50
Paper-II	General Medicine	100	100	100	50
Paper-III	Physiotherapy in Orthopaedic Conditions	100	100	100	100
Paper-IV	Physiotherapy in Medical Conditions	100	100	100	100
Paper-V	Research Methodology and Biostatistics	100	100	---	---
Paper-VI	Neurology	100	100	100	100
	Clinical Training				150

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FOURTH YEAR

Sr.No.	Subject	Theory		Practical	
		Marks	Teaching Hours	Marks	Teaching Hours
Paper-I	General Surgery	100	100	100	50
Paper-II	Community Physiotherapy & Rehabilitation	100	100	100	50
Paper-III	Pediatrics & Geriatrics	100	100	100	100
Paper-IV	Physiotherapy in Neurological Conditions	100	100	100	100
Paper-V	Physiotherapy in Surgical Conditions	100	100	100	100
Paper-VI	Rehabilitation, Organization and Administration	100	150	---	---
Paper-VII	Computer Applications	---	---	50	50
	Clinical Training	---	---	---	150

Practical Schedule
Internship / Externship
Details

NOTE: Project work done by student on patients/clinical cases seen during internship should be submitted by student at the end of internship of six months duration.

**BACHELOR OF PHYSIOTHERAPY (ANNUAL SYSTEM)
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PART-I

PAPER-I: HUMAN ANATOMY

Time: 3 Hrs.

M. Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters: -

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

General Introduction

1. Histology & Osteology

- i. **Histology:** Cell, Tissues of the body, Epithelium, Connective Tissue, Cartilage, Lymph, Muscle, Nerve etc.
- ii. **Osteology-** Bones, Formation, Function, Growth, and Repair of bones.
- iii. **General Embryology-** Ovum, Spermatozoa's, Fertilization, Differentiation, Development of various systems and Foetal circulation.

2. Systems of Human body (a brief Outline):

- i. **Cardiovascular System** – Arteries, capillaries, veins, heart, lymphatic system.
- ii. **Respiratory System** – Anatomy of upper and lower respiratory tract including nose, larynx, trachea, bronchi, pleura, and lungs.
- iii. **Digestive System** – Anatomy of the gastro-intestinal tract.
- iv. **Urogenital System** – Anatomy of Urinary system, male and female reproductive system.
- v. **Endocrine System** – The various organs and production of hormones including definition, structures in general, control of secretions and role of hypothalamus.
- vi. **Integumentary System** – Skin (Layers), Associated glands
- vii. **Surface Anatomy-** Identification of Anatomical Structures

3. Neuroanatomy: Microscopic and gross study of: -

- i. **Central Nervous System-** Spinal Cord Segments & Areas, Brainstem, Cerebellum, Inferior colliculi, Superior Colliculi, Thalamus, Hypothalamus, Meninges, Blood supply of the brain, Lateral ventricles, Epithalamus, Cerebral hemispheres, Internal Capsule Rhinencephalon, Visual radiation, Auditory radiation, Corpus striatum, Pyramidal System, Extra-Pyramidal System, Autonomic Nervous System
- ii. **Organization of Central Nervous System-** Spinal Nerves
- iii. **Cranial Nerves**
- iv. **Peripheral Nervous System-** Neuromuscular Junction, Sensory End Organs, Sympathetic system, Para-sympathetic system

**BACHELOR OF PHYSIOTHERAPY (ANNUAL SYSTEM)
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PART-I

SECTION-B

Upper Extremity

1. **Osteology:** Outline the anatomical features, attachments, ossification, and side determination of the bones of upper limb. Clavicle, Scapula, Humerus, Radius, Ulna, Carpals, Metacarpals, Phalanges.
2. **Myology**
 - i. Muscles of front and back of Upper Arm: Origin, Insertion, Nerve Supply and Action.
 - ii. Muscles of front and back of forearm: origin, insertion, nerve supply and action.
 - iii. Small muscles of hand with their origin, insertion, nerve supply and action.
 - iv. Nerves of upper Sections and mention their position course, relations, and distribution.
 - v. Detail explanation of joints of upper limb: shoulder guide, Shoulder joint, Elbow, Wrist, and joints of hand.
 - vi. Indicate the blood vessels of upper limb and mention their position course, relations, distribution, and main branches.
 - vii. Lymphatic drainage of upper limb.
 - viii. Applied anatomy of all structures of U/L.

3. Regional Anatomy

Detailed explanation of the following with their applied anatomy.

- i. Pectoral Region
- ii. Scapular Region
- iii. Cubital Fossa
- iv. Axilla
- v. Insatiate formation of Brachial Plexus
- vi. Spaces of the hand

SECTION-C

TRUNK-THORAX ABDOMEN

1. Osteology:

- i. Vertebral columns: Identify the parts of typical vertebra and state the main features, attachments and ossification.
- ii. Intervertebral disc and mention its part.
- iii. Ribs: Parts and main features of typical rib and define true, false and floating ribs.
- iv. Sternum: State the parts and anatomical features.

2. Myology:

- i. Fascia and muscles of back
- ii. Fascia and muscles connecting U/L with vertebral column: origin, insertion, nerve supply, action.
- iii. Intercostal muscles and diaphragm: origin, insertion, nerve supply and action.
- iv. List layers of anterior Abd wall muscles and mention its origin, insertion, nerve supply and action of these muscles.
- v. Fascia and muscles of back: origin, insertion, nerve supply and action.

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PART-I

3. Joints of Thorax

Identify the various joints and explain in detail:

- i. Manubriosternal joint
- ii. Costo vertebral joint
- iii. Costo transverse joint
- iv. Costo Chondral joint
- v. Chondro sternal joints
- vi. Inter vertebral joint
- vii. Movements of vertebral column
- viii. Respiratory movements
- ix. Mention the course and branches and nerves, blood vessels and lymphatic drainage of trunk-thorax-abdomen.
- x. Lumbar Plexus: Position, formation, and branches.
- xi. Rectus sheath: formation and contents.
- xii. Contents of vertebral canal
- xiii. Intercostal space and its contents
- xiv. Diaphragm-structures passing through it.
- xv. Applied Anatomy of structures of trunk – thorax – abdomen.

SECTION-D

1. PELVIS

- i. Features of pubic symphysis and sacroiliac joints.
- ii. Muscles of public floor and mention their attachments, action and nerve supply.
- iii. Difference between male and female pelvis.
- iv. Main features of subdivision, boundaries, walls, and floor of pelvis.
- v. Urogenital diaphragm (outlines only)
- vi. Applied anatomy of plexus.
- vii. Lymphatic damage
- viii. Nerve supply
- ix. Sacral Plexus
- x. Mention the blood vessels of the region with course, variations, distribution and main branches.

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PART-I

2. LOWER EXTREMITY

1. **Osteology:**
 - i. Hip bone, femur, Tibia, Fibula, Patella, and bones of the foot
2. **Myology:**
 - i. Fascia and muscles in front of thigh: Origin, Insertion, Nerve Supply, Action
 - ii. Fascia and muscles of medial side of thigh: Origin, Insertion, Nerve Supply, Action
 - iii. Fascia and muscles of back of thigh
 - iv. Fascia and muscles of gluteal region
 - v. Fascia and muscles of front of leg and dorsum of foot
 - vi. Fascia and muscles of lateral side of leg
 - vii. Fascia and muscles of back of leg and sole of foot
 - viii. Detailed explanation of joints of Lower Leg: Pelvic Girdle, Hip, joint, Knee joint, Ankle joint, joints of foot.
 - ix. Identify the nerves of Lower Leg and mention their position course, relations distribution
 - x. Indicate the blood vessels of Lower Leg and mention their position course, relation, distribution and main branches
 - xi. Lymphatic drainage of Lower Leg
 - xii. Explain Femoral triangle and subsartorial canal
 - xiii. Popliteal fossa
 - xiv. Anatomy of structures of Lower Leg

Radiological Anatomy: Radiographic appearance of Musculo-skeletal system of Upper limb, Lower limb, Spine.

PRACTICALS

At the end of course students will be able to demonstrate the following:

1. Surface Anatomy: To study, identify and mark the surface landmarks on human body.
2. The muscles of trunk, lower and upper extremities and face.
3. Bones of Human Body with special emphasis on origin and insertion of muscles and ligaments.
4. Anatomy of joints of upper and lower extremities and vertebral column on models, charts and Cds.
5. Anatomy of C.N.S and P.N.S on models, charts and Cds.
6. The gross anatomy of Respiratory, Digestive, Endocrine, Urinary and Genital system on models, charts and Cds.

Books Recommended:

1. L. Williams & Warwick, Gray's Anatomy-Churchill Livingstone. 2nd South Asian Edition.
2. Inderbir Singh, Textbook of Anatomy with Colour Atlas-Vol. 1, 2, 3 Jaypee Brothers 11th Edition, 2019.
3. B.D. Chaurasia, Human Anatomy-Volume 1, 2, 3 CBS Publishers & Distributors, 9th Edition, 2023
4. McMinn's Last's Anatomy-Regional and applied, Churchill Livingstone 8th Edition, 1990.
5. McMinn's et al-A Colour Atlas of Human Anatomy, Mosby 8th Edition, 2019.
6. Cunningham Manual of Practical Anatomy Vol. I, II, III, Churchill Livingstone, 16th Edition, 2023.
7. Inderbir Singh, A Textbook on Human Neuro Anatomy, Jaypee Brothers, 10th Edition, 2017.
8. Snell-Clinical Anatomy-Lippincott, 1st Edition, 2018.
9. Human Anatomy by Byas Deb Ghosh, 3rd Edition, 2023.
10. Textbook of General Anatomy by V Subhadra Devi, 2nd Edition, 2022.

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PART-I

PAPER-II: HUMAN PHYSIOLOGY

Time: 3 Hrs.

M. Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

General Introduction:

1. **Cell Introduction:** Outline of basic concepts of cell structure, functions of components and transport across membranes
2. **Skin:** Functions, blood flow and temperature regulation.
3. **Blood and Lymph:** Cell renewal system, haemoglobin, erythrocyte granulocyte, lymphocyte, coagulation, regulation of hydrogen within concentration of body fluids, fluid distribution and exchange.
4. **Digestion:** Control of food and water intake and secretion and absorption movements of the alimentary canal, Metabolism Carbohydrate, Protein & Fat.

SECTION-B

Physiology of the systems of the body:

1. **Circulation:** Cardio-vascular system, mechanical and electro-physiological activity of the heart, regulation of heart, coronary circulation, haemodynamics, circulation through brain, skin and skeletal muscle.
2. **Excretion:** Renal functions including formation of Urine & Micturition.
3. **Respiration:** Respiratory gases, pulmonary gas exchange, control and mechanics of breathing, hypoxia, asphyxia, dyspnoea, oxygen therapy and resuscitation.
4. **Endocrine System:** Outline of various hormones and their actions, pituitary gland, thyroid, parathyroid, adrenal glands & Gonads.

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PART-I

SECTION-C

Neurophysiology

1. Neuron: Properties and functions.
2. Action Potential
3. Special properties of nerve trunks and tracts.
4. Motor Sections.
5. Reflex physiology
6. Synapse and synaptic transmission.
7. Supraspinal Control.
8. Cerebellum and basal ganglia.
9. Autonomic nervous system.
10. Somatic sensation.
11. Pain
12. Taste, Olfaction, Auditory and Vision.
13. Neuro physiological psychology.

SECTION-D

Muscle Physiology:

Gross and Microscopic

1. Structure and function of Muscle tissue – skeletal and cardiac.
2. Chemical processes involved in muscle contraction.
3. Physiology of muscle contraction.

Physiology of exercise and work:

1. Circulatory and respiratory response to exercise including effects on the heart blood circulation, body fluid changes, pulmonary ventilation, gas exchange and transport, etc.
2. Effects of exercise and work on other body functions.
3. Metabolic and environmental aspects of exercise and work – metabolism, energy requirement, efficiency of muscular work, nutritional aspects, heat and body temperature regulation & environmental factors.
4. Effects of Exercise training – endurance, fatigue and recovery.
5. Fitness and health – age, sex, body type, race, stress and medical aspects of exercise

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PRACTICALS

At the end of course students will be able to perform and demonstrate the following:

1. Hematology experiments performed by the student

- Identification of blood cells and different counts.
- W.B.C. Count and R.B.C. Count.
- Hemoglobin percentage.
- Blood grouping.
- Bleeding time and clotting time.

2. Clinical Examination performed by the student:

- Pulse rate, Heart rate and measurement of Blood Pressure.
- Respiratory rate and Auscultation.
- Reflexes – Superficial Deep.
- Sensations.
- Tests for functions of Cerebrum.
- Tests for functions of Cerebellum

3. Demonstration only:

- E.S.R.
- Artificial respiration and C.P.R.
- Respiratory efficiency tests.
- Normal E.C.G.

Books Recommended:

1. Text book of Medical Physiology, 14th Edition–Arthur Guyton (Mosby), 2021.
2. Text book of Physiology –Anand & Manchanda, Tata McGraw Hill.
3. Human Physiology 13th Edition, Vol. 1 & 2, Chatterjee. CC, Medical Allied, 2020.
4. Concise Medical Physiology. 6th Edition, Chaudhari, S.K, New Central Agency, Calcutta, 2021.
5. Principles of Anatomy and Physiology 16th Edition. Tortora & Grabowski–Harper Collins, 2023.
6. Text book of Practical Physiology 10th Edition – Ghai – Jaypee, 2022.

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PART-I

PAPER-III: BIOCHEMISTRY

Time: 3 Hrs.

M. Marks: 100

Theory: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. **Water and Electrolyte:** Fluid compartment, daily intake and output sodium and potassium metabolism.
2. **Biophysics:** Concepts of pH and buffers, acid base equilibrium osmotic pressure and its physiological applications.
3. **Cell:** Morphology, structure & kinetics of cell, cell membrane, Nucleus, chromatin, Mitochondria, Endoplasmic Reticulum, Ribosomes, **DNA & RNA**
4. **Connective Tissue:** Mucopolysaccharide connective tissue proteins, glycoproteins.
5. **Nerve Tissue:** Composition, chemical mediators of Nerve activity.
6. **Isotopes:** Isotopes and their role in treatment and diagnosis of diseases.

SECTION-B

1. **Carbohydrates:** Definition, functions, sources, classifications, Monosaccharides, Disaccharides, Oligosaccharides, Polysaccharides, mucopolysaccharide and its importance, interconversions of different sugars.
2. **Lipids:** Definition, function, sources, classification, simple lipid, compound lipid, derived lipid, unsaturated and saturated fatty acid, Essential fatty acids and their importance, Blood lipids and their implications, cholesterol and its importance.
3. **Proteins:** Definition, sources, classification, simple protein conjugated protein, derived proteins, properties and varieties of proteins.

SECTION-C

1. **Enzymes:** Definitions, classification, mode of action, kinetics, factor affecting enzyme action, clinical importance of enzyme.
2. **Vitamins:** Classification, fat soluble vitamins, A, D, E & K, water soluble vit. B complex & C, Daily Requirements, Physiological functions and diseases of Vitamin deficiency.
3. **Nutrition:** Dietary requirements & Balanced diet.
4. **Hormones:** Functional Aspects of Hormones: insulin, glucagon Thyroid and Parathyroid hormones, cortical & sex hormones.

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PART-I

SECTION-D

1. **Bioenergetics:** Concept of free energy change, Exergonic and endergonic reactions, concepts regarding energy rich compounds, Respiratory chain and Biological oxidation.
2. **Carbohydrate Metabolism:** Glycolysis, HMP shunt pathway, TCA cycle, glycogenesis, glycogenolysis, Gluconeogenesis, Maintenance of Blood Glucose.
3. **Lipid Metabolism:** Fatty acid oxidation, Fatty acid synthesis, Metabolism of cholesterol, Ketone bodies.
4. **Protein Metabolism:** Transamination, Transmethylation, Deamination, Fate of ammonia, urea synthesis and synthesis of creatine.

Books Recommended:-

1. Text book of Medical Biochemistry. Chatterjee M.N. and Shinde R., 9th Edition, 2023, Jaypee Brothers Medical Publishers.
2. Text book of Biochemistry for Medical Students. Vasudevan D.M., Sreekumari S., and Kannan V. 10th Edition, 2022, Jaypee Brothers Medical Publishers.
3. Clinical Biochemistry: Metabolic & Clinical aspects. Marshall W.J. et al. 3rd Edition, 2014, Churchill Livingstone.

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PART-I

PAPER- IV: ELECTROTHERAPY-I

Time: 3 Hrs.

M. Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

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, electron theory, static and current electricity.
- c) Conductors, Insulators, Potential difference, Resistance & Intensity.
- d) Ohm's Law – Its application to AC & DC currents.
- e) Rectifying Devices – Thermionic Valves, Semiconductors, Transistors, Amplifiers, Transducers Oscillator circuits.
- f) Capacitance, condensers in DC and AC Circuits.
- g) Display devices & indicators – analogue & digital.

Effects of Current Electricity:

1. Chemical effects – Ions and Electrolytes, Ionisation, Production of a E.M.F. by chemical actions.
2. Magnetic effects, Molecular Theory of Magnetism, Magnetic fields, Electromagnetic Induction.
3. Mili ammeter and Voltmeter, Transformers and Choke Coil.
Thermal Effects – Joule's Law and Heat production.
4. Physical Principles of Sound and its Properties.
5. Physical Principles of Light and its Properties.
6. Electromagnetic Spectrum – Biophysical Application.

SECTION-B

Electrical supply:

- a) Brief outline of main supply of electric current.
- b) Dangers – short circuits, electric shocks.
- c) Precautions – safety devices, earthing, fuses etc.
- d) First aid & initial management of electric shock.

**BACHELOR OF PHYSIOTHERAPY (ANNUAL SYSTEM)
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PART-I

Low Frequency Currents:

1. **Introduction:** Direct, Alternating & Modified Currents.
2. **Direct current:** Production of direct current, Physiological and Therapeutic Effects of Direct Current, Anodal and Cathodal Galvanism, Ionisation and Their Application in Various Conditions.
3. **Iontophoresis:** Principles of Clinical Application, Indication, Contraindication, Precaution, Operational Skills of Equipment & Patient Preparation.
4. **Modified Direct Current:** various pulses, duration and frequency and their effect on Nerve and Muscle tissue. Production of interrupted and surged current & their effects.
5. **Faradic, surge faradic; galvanic and Interrupted galvanic current:** Physiological and therapeutic effects, principles of clinical application, indications, contra indications, precautions, operational skills of equipment & patient preparation.
6. **Transcutaneous Electrical Nerve Stimulations (TENS):**
 - a) Types of Frequency, pulse widths, frequencies & intensities used as TENS applications.
 - b) Theories of pain relief by TENS.
 - c) Principle of clinical application, effects & uses, indications, contraindications, precautions, operational skills of equipment & patient preparation.

Electrical Reactions and Electro – diagnostic tests:

- a) Electrical Stimuli and normal behaviour of Nerve and muscle tissue.
- b) Types of lesion and development of reaction of degeneration.
- c) Faradic – Intermittent direct current test.
- d) S.D. Curve and its application.
- e) Chronaxie, Rheobase & pulse ratio.

SECTION-C

1. **Infra red rays:** Wavelength, frequency, types & sources of IRR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation.
2. **Ultra – Violet Rays (UVR):**
 - a) Wavelength, frequency, types & sources of UVR generation, techniques of irradiation, physiological & therapeutic effects, indications, contraindications, precautions, operational skills of equipment & patient preparation.
 - b) Dosimetry of UVR.

SECTION-D

Superficial heat - Paraffin wax bath, moist heat, electrical heating pads.

- a) Mechanism of production.
- b) Mode of heat transfer.
- c) Physiological & therapeutic effects.
- d) Indications, contraindications, precautions, operational skills of equipment & patient preparation.

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PART-I

PRACTICALS

At the end of course students will be able to demonstrate the following:

1. To study the electrical supply of the equipment & safety devices including fuse.
2. Demonstration of low frequency currents for stimulation of sensory nerves, motor nerves as well as motor points of various muscles region-wise, including the upper, lower limb & trunk.
3. Demonstration of therapeutic application of different low frequency currents which includes Faradic foot bath, Faradism under pressure and Iontophoresis.
4. Demonstration of electro-diagnosis by plotting strength-duration curves (SD curves), Chronaxie and Rheobase.
5. Demonstration and application of various thermo-therapeutic modalities which include Hydrocollator unit and Paraffin Wax Bath unit.
6. Demonstration and application of actino-therapeutic modalities which includes Infrared lamps and Ultra violet units- region wise.
7. Demonstration of TENS, its operation and application– region wise.

Books Recommended:

1. Electrotherapy Explained: Principles & Practice – Low & Reed – Butterworth Heinemann. 4th ed. 2008.
2. Clayton's Electrotherapy, (9th Ed.) Forster & Palastanga Bailliere Tindall. 9th edition 1983
3. Therapeutic Heat and Cold – Lehmann – Williams & Wilkins. 4th ed. 1990
4. Principles and Practice of Electrotherapy – Kahn – Churchill Livingstone. 4th ed. 2000

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PART-I

PAPER-V: EXERCISE THERAPY-I

Time: 3 Hrs.

M. Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Introduction to Exercise therapy: Principles, techniques and general areas of its application, Assessment & its importance.

Description of positions: fundamental starting positions and derive position including joint positions, muscle work, stability, effects and uses.

Introduction to Movements: analysis of joint motion, muscle work and Neuro – muscular co – ordination.

Classification of movements: Describe the types, technique of application, indications, contraindications, effects and uses of the following:

- | | |
|-----------------------------|----------------------|
| a) Active movement | b) Passive movement |
| c) Active assisted movement | d) Resisted movement |

Suspension Therapy: To study the principles, techniques of application indication, Contraindication, precaution, effects and uses of Suspension Therapy.

Yoga: General introduction to Yoga, Conceptual framework, various “asanas”, the body – mind relationship, efforts & precautions.

SECTION-B

Manual Muscle Testing

- Principles and application techniques of Manual muscle testing.
- Testing position, procedure and grading of muscles of the upper limb, lower limb and trunk etc.

Goniometers and its types:

- Principles, techniques and application of Goniometry.
- Testing position, procedure and measurement of R.O.M. of the joints of upper limbs, lower limbs and trunk.

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PART-I

SECTION-C

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, Musculoskeletal, Excretory, Respiratory, Integumentary system and Metabolism.
- c) Classify, define and describe: - effleurage, stroking, kneading, petrissage, deep friction, vibration and shaking etc.
- d) Preparation of patient: Effects, uses, indications and contraindications of the above manipulation.

SECTION-D

Motor Learning

- i) **Introduction to motor learning**
 - a) Classification of motor skills.
 - b) Measurement of motor performance.
- ii) **Introduction to motor control**
 - a) Theories of motor control.
 - b) Applications.
- iii) **Learning Environment**
 - a) Learning of Skill.
 - b) Instruction & augmented feed back.
 - c) Practice conditions.

PART-I

Relaxation & Therapeutic Gymnasium

Relaxation

- 1. Describe relaxation, muscle fatigue, muscle spasm and tension (mental & physical).
- 2. Factors contributing to fatigue & tension.
- 3. Techniques of relaxation (local and general).
- 4. Effects, uses & clinical application.
- 5. Indication & contraindication.

Therapeutic Gymnasium

- i) Setup of a gymnasium & its importance.
- ii) Various equipment in the gymnasium.
- iii) Operational skills, effects & uses of each equipment.

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PART-I

PRACTICALS

On completion of course student will be able to demonstrate the following:

1. Demonstrate the Soft tissue manipulative techniques region wise – upper limb, lower limb, neck, back and face.
2. Demonstrate the technique of measuring ROM of joints – upper limb, lower limb & trunk.
3. Demonstrate the technique of grading of muscle strength region wise – upper limb, lower limb and trunk based on MMT.
4. Demonstrate the position of joints, muscle work, and stability of various fundamental and derived positions.
5. Demonstrate different types of muscle contraction, muscle work, group action of muscles and co-ordinated movements.
6. Demonstrate the various types of suspension therapy and its application on various parts of body – region wise.
7. Demonstrate the local & general relaxation techniques.
8. Describe and demonstrate structure & function along with application of various equipments in a gymnasium.

Books Recommended:-

1. Practical Exercise Therapy - Hollis - Blackwell Scientific Publications. 4th Edition, 1999
2. Therapeutic Exercises - Basmajian - Williams and Wilkins. 5th Edition 1990
3. Therapeutic Exercises Foundations and Techniques - Kisner and Colby - F.A. Davis. 8th Edition, 2023
4. Proprioceptive Neuromuscular Facilitation - Voss et al - Williams and Wilkins. 3rd Edition, 1985
5. Principle of Exercise Therapy - Gardiner - C.B.S. Delhi. 4th Edition, 2023
6. Beard's Massage - Wood – W. B. Saunders. 4th Edition, 1997
7. Motor Control: Theory and Practical Applications Shumway - Cook & Wallcott- Lippincott. 2nd Edition, 2000
8. Hydrotherapy, Principles and Practices - Campion - Butterworth Heinmann. 2nd Edition, 1997
9. Muscle testing and functions - Kendall - Williams & Wilkins. 6th Edition, 2023
10. Daniels and Worthingham's - Muscle Testing - Hislop & Montgomery - W.B. Saunders. 8th Edition 2007
11. Measurement of Joint Motion: A Guide to Goniometry - Norkins & White - F.A. Davis. 5th Edition 2017

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PART-I

PAPER-VI: SOCIOLOGY & COMMUNITY HEALTH

Time: 3 Hrs.

M. Marks: 100

Theory: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. **Introduction:** Definitions of sociology, sociology as a science of society, uses of the study of sociology, application of knowledge of sociology in physiotherapy and occupational therapy.
2. **Sociology & Health:** Social factors affecting health status, social consciousness and perception of illness, social consciousness and meaning of illness, decision making in taking treatment. Institutions of health, their role in the improvement of the health of the people.
3. **Socialization:** Meaning of socialization, influence of social factor on personality, socialization in hospitals, socialization in the rehabilitation of patients.
4. **Social Groups:** Concept of social groups, influence of formal and informal groups on health and sickness, the role of primary groups and secondary groups in the hospitals and rehabilitation settings.

SECTION-B

1. **Family:** Influence of family on human personality, discussion of changes in the functions of a family, influence of family on the individual's health, family and nutrition, the effects of sickness on family, and psychosomatic disease.
2. **Community:** Concept of Community, role of rural and urban communities in public health, role of Community in determining beliefs, practices and home remedies in treatment.
3. **Culture:** Components of culture. Impact of culture on human behavior, cultural meaning of sickness, response & choice of treatment (role of culture as social consciousness in moulding the perception of reality), culture induced symptoms and disease, sub – culture of medical workers.
4. **Caste System:** Features of modern caste system and its trends.
5. **Social Change:** Meaning of social change, factors of social change, human adaptation and social change, social change and stress, social change and deviance, social change and health programmes, the role of social planning in the improvement of health and in rehabilitation.

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PART-I

SECTION-C

1. **Social Control:** Meaning of social control, role of norms, folkways, customs, morals, religion, law and other means of social control in the regulation of human behavior, social deviance and disease
2. **Social Problems of the Disabled:** 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
3. **Social Security:** Social security and social legislation in relation to the disabled.
4. **Social Worker:** The role of medical social worker.

SECTION-D

Community Health:

1. Introduction to Community Health, Community and rehabilitation.
2. Community based rehabilitation in relation to different medical and surgical conditions e.g. Cholera, Typhoid, Diptheria, Leprosy, Poliomyelitis, HIV & AIDS, Hepatitis etc.
3. Prevention of diseases at different levels.
4. Community based rehabilitation vs. institutional based rehabilitation – comparison and different aspects. Community resources and their uses.

Books Recommended:-

1. Mcgee - Sociology - Drydon Press Illinois.
2. Kupuswamy - Social Changes in India - Vikas, Delhi.
3. Ahuja - Social Problems - Bookhive, Delhi.
4. Ginnsberg - Principles of Sociology - Sterling Publications.
5. Parter & Alder - Psychology & Sociology Applied to Medicine - W.B. Saunders.
6. Julian - Social Problems - Prentice Hall.

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PART-I

PAPER-VII: ਲਾਜ਼ਮੀ ਪੰਜਾਬੀ

Time: 03 Hours

**ਕਰੈਡਿਟ 8-0-0
Max. Marks: 100
(6 ਪੀਰੀਅਡ ਪ੍ਰਤੀ ਹਫ਼ਤਾ)**

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿਚੋਂ ਇਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ। ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਅੰਕ ਬਰਾਬਰ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿਚ ਕਰ ਸਕਦਾ ਹੈ।

ਸੈਕਸ਼ਨ-ਏ

ਸਰਵੋਤਮ ਪੰਜਾਬੀ ਕਵਿਤਾ ਤੇ ਕਹਾਣੀ

(ਸੰਪਾ. ਡਾ. ਰਮਿੰਦਰ ਕੌਰ, ਡਾ. ਮੇਘਾ ਸਲਵਾਨ)

ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅੰਮ੍ਰਿਤਸਰ।

ਕਵਿਤਾ ਦੀ ਪ੍ਰਸੰਗ ਸਹਿਤ ਵਿਆਖਿਆ, ਕਹਾਣੀ ਦਾ ਵਿਸ਼ਾ-ਵਸਤੂ/ਸਾਰ

ਸੈਕਸ਼ਨ-ਬੀ

ਗੋਲਡਨ ਪੰਚ (ਬਲਵੰਤ ਸਿੰਘ ਸੰਧੂ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ)

(ੳ) ਵਿਸ਼ਾ ਵਸਤੂ/ਸਾਰ

(ਅ) ਨਾਵਲ ਕਲਾ/ਬਿਰਤਾਂਤਕ ਜੁਗਤਾਂ

ਸੈਕਸ਼ਨ-ਸੀ

ਭਾਸ਼ਾ ਵੰਨਗੀਆਂ (ਭਾਸ਼ਾ ਦਾ ਟਕਸਾਲੀ ਰੂਪ, ਭਾਸ਼ਾ ਅਤੇ ਉਪ-ਭਾਸ਼ਾ ਦਾ ਅੰਤਰ, ਪੰਜਾਬੀ ਉਪ-ਭਾਸ਼ਾਵਾਂ ਦੇ ਪਛਾਣ-ਚਿੰਨ੍ਹ)

ਸੈਕਸ਼ਨ-ਡੀ

(ੳ) ਲੇਖ ਰਚਨਾ

(ਅ) ਪੈਰਾਪੜ੍ਹ ਕੇ ਪ੍ਰਸ਼ਨਾਂ ਦੇ ਉੱਤਰ

(ੲ) ਅਖਾਣ ਅਤੇ ਮੁਹਾਵਰੇ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਰਾਜਿੰਦਰ ਪਾਲ ਸਿੰਘ ਬਰਾੜ, ਪੰਜਾਬੀ ਕਵਿਤਾ ਦਾ ਇਤਿਹਾਸ, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ।
2. ਬਲਦੇਵ ਸਿੰਘ ਧਾਲੀਵਾਲ, ਪੰਜਾਬੀ ਕਹਾਣੀ ਦਾ ਇਤਿਹਾਸ, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ।
3. ਸਤਿੰਦਰ ਸਿੰਘ, ਆਧੁਨਿਕ ਪੰਜਾਬੀ ਵਾਰਤਕ ਦਾ ਇਤਿਹਾਸ, ਪੰਜਾਬੀ ਅਕਾਦਮੀ, ਦਿੱਲੀ।
4. ਜੀਤ ਸਿੰਘ ਸੀਤਲ, ਵਾਰਤਕ ਅਤੇ ਵਾਰਤਕ ਸ਼ੈਲੀ, ਪੰਜਾਬ ਸਟੇਟ ਯੂਨੀਵਰਸਿਟੀ ਟੈਕਸਟ ਬੁੱਕ ਬੋਰਡ, ਚੰਡੀਗੜ੍ਹ।
5. ਮਿੰਨੀ ਸਲਵਾਨ, ਪੰਜਾਬੀ ਵਿਆਕਰਨ : ਮੁੱਢਲੇ ਸੰਕਲਪ, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅੰਮ੍ਰਿਤਸਰ।
6. ਹਰਕੀਰਤ ਸਿੰਘ ਅਤੇ ਗਿਆਨੀ ਲਾਲ ਸਿੰਘ, ਕਾਲਜ ਪੰਜਾਬੀ ਵਿਆਕਰਨ, ਪੰਜਾਬ ਯੂਨੀਵਰਸਿਟੀ, ਚੰਡੀਗੜ੍ਹ।
7. ਸਰਦੇਵ ਸਿੰਘ ਗਿੱਲ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਲਿਪੀ ਅਤੇ ਵਿਆਕਰਨ, ਲੋਕਗੀਤ ਪ੍ਰਕਾਸ਼ਨ, ਚੰਡੀਗੜ੍ਹ।
8. ਜੋਗਿੰਦਰ ਸਿੰਘ ਪੁਆਰ, ਭਾਸ਼ਾ ਵਿਗਿਆਨ : ਸੰਕਲਪ ਤੇ ਦਿਸ਼ਾਵਾਂ, ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਅਕਾਦਮੀ, ਜਲੰਧਰ।
9. ਭਾਸ਼ਾ ਬੋਧ, ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸੰਨਜ਼, ਹਾਲ ਬਜ਼ਾਰ, ਅੰਮ੍ਰਿਤਸਰ।

Course Outcome:

After successful completion of this course, the students will acquire the knowledge about the Punjabi language and grammar etc. the

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PART-I

**PAPER-VII: ਮੁੱਢਲੀ ਪੰਜਾਬੀ
(In lieu of Compulsory Punjabi)**

ਸਮਾਂ : ਤਿੰਨ ਘੰਟੇ

ਕੁਲ ਅੰਕ : 100

ਅੰਕ-ਵੰਡ ਅਤੇ ਪਰੀਖਿਅਕ ਲਈ ਹਦਾਇਤਾਂ

1. ਪ੍ਰਸ਼ਨ ਪੱਤਰ ਦੇ ਚਾਰ ਭਾਗ ਹੋਣਗੇ। ਹਰ ਭਾਗ ਵਿੱਚ ਦੋ ਪ੍ਰਸ਼ਨ ਪੁੱਛੇ ਜਾਣਗੇ।
2. ਵਿਦਿਆਰਥੀ ਨੇ ਕੁੱਲ ਪੰਜ ਪ੍ਰਸ਼ਨ ਕਰਨੇ ਹਨ। ਹਰ ਭਾਗ ਵਿੱਚ ਇੱਕ ਪ੍ਰਸ਼ਨ ਲਾਜ਼ਮੀ ਹੈ।
ਪੰਜਵਾਂ ਪ੍ਰਸ਼ਨ ਕਿਸੇ ਵੀ ਭਾਗ ਵਿੱਚੋਂ ਕੀਤਾ ਜਾ ਸਕਦਾ ਹੈ।
3. ਹਰੇਕ ਪ੍ਰਸ਼ਨ ਦੇ ਬਰਾਬਰ ਅੰਕ ਹਨ।
4. ਪੇਪਰ ਸੈੱਟ ਕਰਨ ਵਾਲਾ ਜੇਕਰ ਚਾਹੇ ਤਾਂ ਪ੍ਰਸ਼ਨਾਂ ਦੀ ਵੰਡ ਅੱਗੋਂ ਵੱਧ ਤੋਂ ਵੱਧ ਚਾਰ ਉਪ-ਪ੍ਰਸ਼ਨਾਂ ਵਿੱਚ ਕਰ ਸਕਦਾ ਹੈ।

ਪਾਠ-ਕ੍ਰਮ

ਸੈਕਸ਼ਨ-ਏ

ਪੈਂਤੀ ਅੱਖਰੀ, ਅੱਖਰ ਕ੍ਰਮ, ਪੈਰ ਬਿੰਦੀ ਵਾਲੇ ਵਰਣ ਅਤੇ ਪੈਰ ਵਿਚ ਪੈਣ ਵਾਲੇ ਵਰਣ ਅਤੇ ਮਾਤ੍ਰਵਾਂ (ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ), ਲਗਾਖਰ (ਬਿੰਦੀ, ਟਿੱਪੀ, ਅੱਧਕ) : ਪਛਾਣ ਅਤੇ ਵਰਤੋਂ

ਸੈਕਸ਼ਨ-ਬੀ

ਪੰਜਾਬੀ ਸ਼ਬਦ-ਬਣਤਰ : ਮੁੱਢਲੀ ਜਾਣ-ਪਛਾਣ

(ਸਾਧਾਰਨ ਸ਼ਬਦ, ਸੰਯੁਕਤ ਸ਼ਬਦ, ਮਿਸ਼ਰਤ ਸ਼ਬਦ, ਮੂਲ ਸ਼ਬਦ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ)

ਸੈਕਸ਼ਨ-ਸੀ

ਨਿੱਤ ਵਰਤੋਂ ਦੀ ਪੰਜਾਬੀ ਸ਼ਬਦਾਵਲੀ : ਬਾਜ਼ਾਰ, ਵਪਾਰ, ਰਿਸ਼ਤੇ-ਨਾਤੇ, ਖੇਤੀ ਅਤੇ ਹੋਰ ਧੰਦਿਆਂ ਆਦਿ ਨਾਲ ਸੰਬੰਧਤ।

ਸੈਕਸ਼ਨ-ਡੀ

ਹਫ਼ਤੇ ਦੇ ਸੱਤ ਦਿਨਾਂ ਦੇ ਨਾਂ, ਬਾਰਾਂ ਮਹੀਨਿਆਂ ਦੇ ਨਾਂ, ਰੁੱਤਾਂ ਦੇ ਨਾਂ, ਇੱਕ ਤੋਂ ਸੌ ਤਕ ਗਿਣਤੀ ਸ਼ਬਦਾਂ ਵਿਚ

ਸਹਾਇਕ ਪੁਸਤਕਾਂ

1. ਕਸਤੂਰੀ ਲਾਲ ਐਂਡ ਸੰਨਜ਼, ਮੁੱਢਲੀ ਪੰਜਾਬੀ, ਗੁਰੂ ਨਾਨਕ ਦੇਵ ਯੂਨੀਵਰਸਿਟੀ, ਅਮ੍ਰਿਤਸਰ।
2. ਮਿੰਨੀ ਸਲਵਾਨ, ਪੰਜਾਬੀ ਵਿਆਕਰਨ : ਮੁੱਢਲੇ ਸੰਕਲਪ, ਰਵੀ ਸਾਹਿਤ ਪ੍ਰਕਾਸ਼ਨ, ਅਮ੍ਰਿਤਸਰ।
3. ਬੂਟਾ ਸਿੰਘ ਬਰਾੜ, ਪੰਜਾਬੀ ਵਿਆਕਰਨ : ਸਿਧਾਂਤ ਅਤੇ ਵਿਹਾਰ, ਚੇਤਨਾ ਪ੍ਰਕਾਸ਼ਨ, ਲੁਧਿਆਣਾ।

ਪਾਠਕ੍ਰਮ ਪਰਿਣਾਮ (Course Outcomes) :

ਇਸ ਪਰਚੇ ਨੂੰ ਪੜ੍ਹਨ ਉਪਰੰਤ ਵਿਦਿਆਰਥੀ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਨੂੰ ਸਿੱਖਣ ਵਿਚ ਮੁਹਾਰਤ ਹਾਸਲ ਕਰਦਾ ਹੈ। ਇਸ ਰਾਹੀਂ ਉਹ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਵਰਣ, ਮਾਤ੍ਰਵਾਂ ਦੀ ਜਾਣਕਾਰੀ ਹਾਸਲ ਕਰਦਾ ਹੋਇਆ, ਪਹਿਲੇ ਪੱਧਰ ਦੀ ਸਿਖਲਾਈ ਹਾਸਲ ਕਰਦਾ ਹੈ। ਇਸ ਉਪਰੰਤ ਸ਼ਬਦ ਬਣਾਉਣ ਦੀ ਪ੍ਰਕਿਰਿਆ ਰਾਹੀਂ ਉਹ ਪੰਜਾਬੀ ਭਾਸ਼ਾ ਦੇ ਨਾਲ ਆਪਣਾ ਜੀਵਨ ਵਿਹਾਰ ਚਲਾਉਣ ਵਿਚ ਸਮਰੱਥ ਹੁੰਦਾ ਜਾਂਦਾ ਹੈ। ਇਸ ਤਰ੍ਹਾਂ ਉਹ ਪੰਜਾਬੀ ਸਾਹਿਤ, ਸਭਿਆਚਾਰ ਅਤੇ ਜਨ-ਜੀਵਨ ਨਾਲ ਡੂੰਘੀ ਸਾਂਝ ਬਣਾਉਣ ਦੇ ਕਾਬਿਲ ਬਣਦਾ ਹੈ।

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PART-I

**PAPER-VII: PUNJAB HISTORY AND CULTURE (Earliest Times to 1000 A.D.)
(Special Paper in lieu of Punjabi) (Compulsory)**

Time: 3 Hours

Max. Marks: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. Physical Features of the Punjab and their impact.
2. Sources of Ancient Punjab History.
3. Harappan Culture: Principal places, town planning, features of social and economic life, religion, causes of disappearance.

SECTION-B

4. The Indo- Aryans:- Original home and settlement in Punjab, political organisation, social, religious, and economies life during the Regvedic Age
5. Impact of Buddhism and Jainism in the Punjab.
6. Political condition of Punjab on the eve of Alexander's Invasions, account of the invasion and its impact.

SECTION-C

7. Punjab under Chander Gupta Maurya and Ashoka.
8. Scythians and Kushans and their contribution to Punjab.
9. Punjab under the Vardhana Emperors.

SECTION-D

10. Punjab from 7th Century to 1000 A.D (Survey of Political History)
11. Development of Education and Literature in the Punjab upto 1000 A.D.
12. Development of Art and Architecture up to 1000 A.D.

Suggested Readings:-

1. L. Joshi (ed): *History and Culture of the Punjab*, Art-I, Patiala, 1989 (3rd edition)
2. L.M. Joshi and Fauja Singh (ed); *History of Punjab*, Vol. I, Patiala 1977.
3. Budha Parkash: *Glimpses of Ancient Punjab*, Patiala, 1983.
4. B.N. Sharma: *Life in Northern India*, Delhi. 1966.

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PART-I
PAPER-VIII: DRUG ABUSE: PROBLEM, MANAGEMENT AND PREVENTION
(Compulsory Paper)

Total Marks: 50

Duration of examination: 3 Hours

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Meaning of Drug Abuse:

- i) Meaning, Nature and Extent of Drug Abuse in India and Punjab.
- ii) Consequences of Drug Abuse for:
 - Individual : Education, Employment, Income.
 - Family : Violence.
 - Society : Crime.
 - Nation : Law and Order problem.

SECTION-B

Management of Drug Abuse:

- i) Medical Management: Medication for treatment and to reduce withdrawal effects.
 - ii) Psychiatric Management: Counselling, Behavioural and Cognitive therapy.
 - iii) Social Management: Family, Group therapy and Environmental Intervention.
- Rehabilitaion

SECTION-C

Prevention of Drug abuse:

- i) Role of family: Parent child relationship, Family support, Supervision, Shaping values, Active Scrutiny.
- ii) School: Counselling, Teacher as role-model. Parent-teacher-Health Professional Coordination, Random testing on students.

SECTION-D

Controlling Drug Abuse:

- i) Media: Restraint on advertisements of drugs, advertisements on bad effects of drugs, Publicity and media, Campaigns against drug abuse, Educational and awareness program
- ii) Legislation: NDPs act, Statutory warnings, Policing of Borders, Checking Supply/Smuggling of Drugs, Strict enforcement of laws, Time bound trials.

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PART-I

References:-

1. Ahuja, Ram (2003), *Social Problems in India*, Rawat Publication, Jaipur.
2. Extent, Pattern and Trend of Drug Use in India, Ministry of Social Justice and Empowerment, Government of India, 2004.
3. Inciardi, J.A. 1981. *The Drug Crime Connection*. Beverly Hills: Sage Publications.
4. Kapoor. T. (1985) *Drug epidemic among Indian Youth*, New Delhi: Mittal Pub.
5. Kessel, Neil and Henry Walton. 1982, *Alcoholism*. Harmond Worth: Penguin Books.
6. Modi, Ishwar and Modi, Shalini (1997) *Drugs: Addiction and Prevention*, Jaipur: Rawat Publication.
7. National Household Survey of Alcohol and Drug abuse. (2003) New Delhi, Clinical Epidemiological Unit, All India Institute of Medical Sciences, 2004.
8. Ross Coomber and Others. 2013, *Key Concept in Drugs and Society*. New Delhi: Sage Publications.
9. Sain, Bhim 1991, *Drug Addiction Alcoholism*, Smoking obscenity New Delhi: Mittal Publications.
10. Sandhu, Ranvinder Singh, 2009, *Drug Addiction in Punjab: A Sociological Study*. Amritsar: Guru Nanak Dev University.
11. Singh, Chandra Paul 2000. *Alcohol and Dependence among Industrial Workers*: Delhi: Shipra.
12. Sussman, S and Ames, S.L. (2008). *Drug Abuse: Concepts, Prevention and Cessation*, Cambridge University Press.
13. Verma, P.S. 2017, "*Punjab's Drug Problem: Contours and Characterstics*", Economic and Political Weekly, Vol. LII, No. 3, P.P. 40-43.
14. World Drug Report 2016, United Nations office of Drug and Crime.
15. World Drug Report 2017, United Nations office of Drug and Crime.

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**PART-II
PAPER-I: PATHOLOGY & MICROBIOLOGY**

Time: 3 Hrs.

M. Marks: 100

Theory: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

General Pathology

1. Aims and objectives of the study of pathology. Meaning of terms, etiology, pathogenesis and lesions.
2. Causes of disease. cell injury – causes of cell injury features of cell injury mechanism of cell injury – hypoxia, free radical injury. Necrosis and gangrene
3. Inflammation–definition, events of acute inflammation, chemical mediator of inflammation, morphological types of acute inflammation, chronic inflammation, difference between acute and chronic inflammation
4. REPAIR–primary healing, secondary healing, factors affecting healing and repair healing of skin, muscle and bone.
5. Fluid and hemodynamic derangements–oedema, hyperemia, Haemorrhage, shock, embolism, thrombosis, infarction
6. Immunity–natural and acquired. immunological mechanisms of tissue injury, hypersensitivity reactions, general features of autoimmune diseases and immunodeficiency diseases.
7. Neoplasia: characteristic of benign and malignant tumors, grading and staging of malignant tumors, a brief outline of the carcinogenic agents and methods of diagnosis of malignancy and general effects of malignancy on the host
8. Nutritional Disorders: deficiency disorders (protein deficiency, vitamin deficiency (A,B,C,D,E,) causes, features, a brief outline of the methods of diagnosis (details not required).

SECTION-B

Systemic pathology: a brief outline of etiology, pathogenesis and general features of disease of the following systems. (The morphology, microscopic details and details of diagnostic procedures are not required).

1. Blood: disorders of RBC, WBC, Platelets
2. Blood Vessels: atherosclerosis, thromboangitis obliterans, varicose vein, DVT, thrombophlebitis, lymphoedema.
3. Disease of heart: congestive cardiac failure, ischemic heart disease, rheumatic heart disease, infective heart disease (pericarditis, myocarditis, endocarditis)
4. Respiratory System: Pneumonias, Bronchiectasis, Emphysema, Chronic bronchitis, Asthma, Tuberculosis.
5. Joints disorders: Arthritis- types and their features.
6. Bone Disorders: osteoporosis, Paget's disease, osteogenesis imperfecta, osteomyelitis, tumors–osteosarcoma, chondrosarcoma, Ewing's sarcoma, multiple myeloma (a brief outline)
7. Muscles: muscular dystrophy, myasthenia gravis.
8. Nervous System: meningitis, encephalitis, vascular diseases of brain, poliomyelitis, nerve injuries

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PART-II

SECTION-C

Microbiology

1. An introduction to microbiology, Classification of microorganisms,
2. Infection – types, source, portals of entry, spread.
3. Prevention and control of infection, Disinfection and antiseptics Sterilization

SECTION-D

1. An outline of the following infectious diseases with respect to the causative organism, mode of transmission, pathogenesis, prevention, and diagnostic tests (details of the execution and interpretation of the tests not required)
2. Chicken Pox, Measles, Mumps, Influenza, Diphtheria, Whooping Cough, Tetanus, Tuberculosis, Leprosy, Rubella, Cholera, Gastroenteritis, Food Poisoning, Hepatitis, AIDS, Typhoid, Rabies, STD, Ameobiasis Kalaazar, Malaria, Filaria.

Books Recommended:-

1. Robbins Pathological Basis of Disease - Cotran, Kumar & Robbins - W.B. Saunders 10 th Edition (2020)
2. General Pathology - Walter & Israel - Churchill Livingstone 7th Edition (2019)
3. Muirs Textbook of Pathology - Anderson - Edward Arnold Ltd 16th Edition(2020)
4. Text book of Pathology - Harsh Mohan - Jaypee Brothers 8th Edition (2022)
5. Pathology: Implications for Physical Therapists - Goodmann and Boissonnault - W.B. Saunders 5 th Edition(2019)
6. Essential of Medical Microbiology - Bhatia & Lal - Jaypee Brothers 4th Edition(2020)
7. Medical Microbiology - Mims - Jaypee Brothers 6th Edition(2018)
8. Microbiology: An Introduction for the Health Sciences – Ackerman and Richards - W.B. Saunders Co.

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PART-II

PAPER-II: PHARMACOLOGY

Time: 3 Hrs.

M. Marks: 100

Theory: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. General action of drugs.
2. Drug allergy and idiosyncrasy.
3. Drug toxicity
4. Metabolic fate of drug
5. Methods of administration
6. Drugs acting on respiratory system
7. Vitamins

SECTION-B

1. Drugs acting on Central nervous system – anaesthetics, alcohols, alkaloids, narcotics, antipyretics, hypnotics, sedatives, anticonvulsants, stimulants, psychotherapeutics **(Brief description)**.
2. Drugs acting on peripheral nervous system – stimulating and inhibiting cholinergic and anticholinergic activity.

SECTION-C

1. Drugs acting on Neuromuscular junction and muscles
2. Drugs for pain management.

SECTION-D

1. Hormones and drugs affecting endocrine functions
2. Drugs acting on cardiovascular system – **(i) Antianginal drugs, (ii) Drugs for MI, (iii) Brief outline of drugs for CHF, (iv) Antihypertensive drugs.**
3. Chemotherapeutic agents – **Modern antibiotics, antitubercular drugs, antiamoebic drugs etc.**

Books Recommended:-

1. Pharmacology and Pharmacotherapeutics - R.S. Satoskar – Popular Publications, Bombay, 26th edition, 2020.
2. The Pharmacologic Principles of Medical Practice - Krantg & Jelleff - Calcutta Scientific Book Agency, 2009.
3. Pharmacology - Praseem K. Das. – Churchill Livingstone,
4. Essential of Medical Pharmacology - K.D. Tripathi - Jaypee Brothers, 8th edition, 2023.

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PART-II

PAPER-III: ELECTROTHERAPY-II

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. Review of Neuro – muscular Physiology including effects of electrical stimulation.
2. Physiological responses to heat gain or loss on various tissues of the body.
3. Therapeutic effects of heat, cold and electrical currents.
4. Physical principles of Electro – magnetic radiation.
5. Physics of sound including characteristics and propagation.

SECTION-B

1. **High frequency currents (S.W.D. and M.W.D.)** – Production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
2. **(a) Medium frequency currents (Interferential Therapy)** – Conceptual framework of medium frequency current therapy, production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
(b) Di-Dynamic Currents, Russian Current – Production, types, therapeutic uses and contraindications of Russian currents and dynamic currents.
3. **High frequency sound waves (Ultrasound)** – Production, biophysical effects, types, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.

SECTION-C

1. **Therapeutic light in Physiotherapy (LASER)** – Definition, historical background, physical principles, biophysical effects, types, production, therapeutic effects, techniques of application, indications, contraindications, precautions, operational skills and patient preparation.
2. **Therapeutic cold (Cryotherapy)** – Sources, biophysical effects, types, therapeutic effects, indications, contraindications, precautions, application techniques and patient preparation.
3. **Therapeutic mechanical pressure (Intermittent compression therapy)** – Principle, biophysical effects, types, therapeutic effects, indications, contraindications, precautions, operational skills and patient preparation.
4. **Shockwave therapy** – history of extracorporeal shockwave therapy , physiological effects
Mechanism of action, principals of shockwave therapy, indications, contraindications precautions & patient prepration, resources & references.

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PART-II

SECTION-D

1. **Electro – diagnosis** – Instrumentation, definition & basic techniques of E.M.G. and E.N.G.
2. **Bio–feedback** – Instrumentation, principles, therapeutic effects, indications, contraindications, limitations, precautions, operational skills and patient preparation.

PRACTICALS

At the end of the course student shall be able to Demonstrate Electrotherapeutic modalities on patients:

1. Demonstration and application of high frequency currents which includes Short wave Diathermy unit and Microwave Diathermy unit- region wise.
2. Demonstration and application of Ultrasound unit–region wise.
3. To study LASER unit, its operation and different methods of application–region wise.
4. To study Cryotherapy and its application region wise.
5. To study Intermittent therapy unit, its operation and different methods of application–region wise.
6. To study Interferential therapy unit, its operation and different methods of application- region wise.
7. To observe various Electro–myography (EMG) procedures.
8. To observe various Electro–neurography (ENG) procedures.
9. To study Bio feedback unit, its operation and different methods of application – region wise.

Books Recommended:-

1. Electrotherapy Explained: Principles & Practice Low & Reed – Butterworth Heinmann 4th edition 2008.
2. Clayton's Electrotherapy 10th edition – Kitchen & Bazin – W.B. Saunders.2005.
3. Therapeutic Heat and Cold Lehmann – Williams & Wilkins 4th Edition 1990.
4. Principles and Practice of Electrotherapy – Kahn – Churchill Livingstone 4th Edition 2008.
5. Electrotherapy: Clinics in Physical Therapy – Wolf – Churchill Livingstone. 1st edition 1981
6. Textbook of electrotherapy –Jagmohan 4th edition, Publishers jaypee brothers 2018.
7. Musculoskeletal shockwave therapy – coombs.schaden.zhou.2000.
8. Principles of electrotherapy –Purshottam chippala 4th Edition, 2017

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PART-II

PAPER-IV: EXERCISE THERAPY-II

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Therapeutic Exercises:

1. Principle, classification, techniques, physiological & therapeutic effects, indications & contraindications of therapeutic exercises.
2. Assessment & evaluation of a patient (region wise) to plan a therapeutic exercise program.
3. Joint Mobility – Etiogenesis of Joint stiffness, general techniques of mobilization, effects, indications, contraindications & precautions.
4. Muscle Weakness– Etiogenesis of muscle weakness (strength, tone, power, endurance & volume), general techniques of strengthening, effects, indication, contraindications & precautions.
5. Neuromuscular Inco-ordination – Review normal neuromuscular coordination, Etiogenesis of neuromuscular in co-ordination & general therapeutic techniques, effects, indications, contraindications & precautions.
6. Functional re-education – General therapeutic techniques to re-educate ADL function.

SECTION-B

Posture, Balance, Gait:

Normal Posture – Overview of the mechanism of normal posture.

Abnormal Posture – Assessment, Types, etiogenesis, management, including therapeutic exercises.

Static and Dynamic Balance – Assessment & management including therapeutic exercises.

Gait – Overview of normal gait & its components.

Gait deviations - Assessment, Types, etiogenesis, management, including therapeutic exercises.

Types of walking aids, indications, effects & various training techniques.

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PART-II

SECTION-C

Hydrotherapy:

1. Basic principles of fluid mechanics, as they relate to hydrotherapy.
2. Physiological & therapeutic effects of hydrotherapy, including joint mobility muscle Strengthening & wound care etc.
3. Types of Hydrotherapy equipment, indications, contraindications, operation skills & patient preparation.
4. Conceptual framework, principle of proprioceptive neuromuscular facilitation (PNF) techniques, including indications, therapeutic effects and precautions.
5. Principles of traction, physiological & therapeutic effects classification, types, indications, contraindications, techniques of application, operational skills & precautions.

SECTION-D

Special Techniques:

1. Introduction to special mobilization & manipulation techniques, effects, indications & contraindications.
2. Review normal breathing mechanism, types, techniques, indications, contraindications, therapeutic effects & precautions of breathing exercises.
3. Group Theory – Types, advantages & disadvantages.
4. Exercises for the normal person – Importance and effects of exercise to maintain optimal health & its role in the prevention of diseases. Types, advantages, disadvantages, indications, contraindications & precautions for all age groups.
5. Introduction to Yoga – Conceptual framework, various “asanas”, the body – mind relationship, effects & precautions.
6. Role of muscle energy technique.

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PART-II

PRACTICALS

On completion of course student will be able to demonstrate the following:

1. To demonstrate assessment & evaluation procedures, including motor, sensory, neuromotor co-ordination, vital capacity, limb length & higher functions.
2. Demonstrate the various techniques of mobilization of joints region wise.
3. Demonstrate the various techniques of progressive strengthening exercises of muscles region wise.
4. Demonstrate and train the use of various ambulation aids in gait training.
5. To assess & evaluate ADL's and practice various training techniques.
6. Demonstrate & practice mat exercises.
7. To assess & evaluate normal & abnormal posture & practice various corrective techniques.
8. To assess & evaluate equilibrium / balance & practice various techniques to improve balance.
9. To study & Demonstrate the structure & functions of hydrotherapy equipments & their applications.
10. Demonstrate & practice various traction techniques, including manual, mechanical & electrical procedures.
11. Demonstrate & practice various group exercise therapies.
12. Demonstrate, practice & experience effects of basic yoga "asanas".
13. Demonstrate, plan & practice exercise programmes for normal persons of various age groups.
14. Demonstrate the techniques of proprioceptive neuromuscular facilitation.

Books Recommended:-

1. Practical Exercise Therapy - Hollis - Blackwell Scientific Publications. 4th Edition, 1999
2. Therapeutic Exercises - Basmajian - Williams & Wilkins. 5th Edition, 1990
3. Therapeutic Exercises Foundations and Techniques - Kisner & Colby -F.A. Davis. 8th Edition, 2023
4. Proprioceptive Neuromuscular Facilitation - Voss et al - Williams and Wilkins. 3rd Edition, 1985
5. Principle of Exercise Therapy - Gardiner - C.B.S. Delhi. 4th Edition, 2023
6. Orthopaedic Physical Therapy - Woods - Churchill Livingstone. 4th Edition, 2019
7. Manipulation and Mobilisation Extremities and Spinal Techniques - Edmond - Mosby. 2nd Edition, 2006
8. Aquatic Exercise Therapy - Bates and Hanson-W.B. Saunders. 1st Edition, 1996
9. Manual Examination and Treatment of Spine and Extremities - Wadsworth - Lippincott. 1st Edition, 1998
10. Hydrotherapy: Principles and Practices - Campion - Butterworth Heinmann. 2nd Edition 1997

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PART-II

PAPER-V: BIOMECHANICS

Time: 3 Hrs.

Marks: 100

Theory: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Mechanics

- a) Introduction to mechanics including motion, forces, parallel forces system
- b) Newton's law of motion, concurrent force systems – composition forces, muscle action line etc.
- c) Centre of Gravity, line of gravity, stability and equilibrium.
- d) Introduction to Bio-Mechanics and terminology.

SECTION-B

Joint Structure and Function:

- a) Basic principles of Joint design and a human joint.
- b) Tissues present in human joint including fibrous tissue, bone cartilage and connective tissue.
- c) Classification of joints.
- d) Joint function, Kinematics chains and range of motion.
- e) 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.

SECTION-C

Muscle Structure and function:

- a) Mobility and stability functions of muscle.
- b) Elements of muscle structure and its properties.
- c) Types of muscle contractions and muscle work.
- d) Classification of muscles and their functions.
- e) Group action of muscles, Co-ordinated movement.

SECTION-D

Posture & Gait:

- a) Posture – Definition, factors responsible for posture, relationship of gravity on posture.
- b) Postural imbalance – factors responsible for imbalance in Static and dynamic positions including ergonomics.
- c) Description of Normal gait, determinants of gait, spatio temporal features and analysis.
- d) Gait deviations – Types, Causative factors and analysis.

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PART-II

Books Recommended:

1. Joint Structure and Function – A Comprehensive Analysis - Norkins & Levangie - F.A. Davis. 5th edition 2001.
2. Measurement of Joint Motion – A Guide to Goniometry - Norkins & White - F.A. Davis. 5th ed. 2017
3. Brunnstrom's Clinical Kinesiology - Smith et al - F.A. Davis. 6th ed. 2011
4. Basic Biomechanics Explained - Low & Reed - Butterworth Heinmann. 1996
5. Kinesiology: Applied to Pathological Motion - Soderberg Lippincott. 1986

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PART-II

PAPER-VI: PSYCHOLOGY

Time: 3 Hrs.

Marks: 100

Theory: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

General Psychology

1. **Definition of Psychology:** Definition of psychology, information in relation to following schools methods and branches.
 - a) **Schools:** Structuralism, functionalism, behaviourism psychoanalysis, gestalt psychology.
 - b) **Methods:** Introspection, observation, inventory and experimental method.
 - c) **Branches:** General, child, social, abnormal, industrial, clinical, counseling, educational.
2. **Heredity and Environment:** Twins, Relative importance of heredity and environment, their role in relation to physical characteristics, intelligence and personality, nature – nature controversy.
3. **Development and Growth Behavior:** Infancy, childhood, adolescence, adulthood, middle age, old age.
4. **Intelligence:** Definitions, IQ, Mental Age, List of various intelligence tests – WAIS, WISC, Bhatia's performance test, Raven's Progressive Matrices test.
5. **Motivation:** Definitions: Motive, drive, incentive and reinforcement, Basic information about primary needs: hunger thirst, sleep, elimination activity, air, avoidance of pain, attitude to sex.

Psychological Needs: Information, security, self-esteem, competence, love and hope.
6. **Emotions:** Definitions: Differentiate from feelings, psychological changes of emotion, Role of RAS, hypothalamus, cerebral cortex, sympathetic nervous system, adrenal gland, heredity and emotion, Nature and control of anger, fear and anxiety.

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PART-II

7 Personality:

- a) **Definitions:** List of components: Physical characteristics, character, abilities, temperament, interest and attitudes.
- b) Discuss briefly the role of heredity, nervous system, physical characteristics, abilities, family and culture of personality development.
- c) **Basic concepts of Freud:** unconscious, conscious, Id, ego and superego, List and define the oral, anal and phallic stages of personality development list and define the 8 stages as proposed by Erickson, 4 concepts of learning as proposed by Dollard and Miller; drive, cue, response and reinforcement.
- d) **Personality assessment:** interview, standardized, non-standardized. Exhaustive, and stress interviews, list and define inventories BAI, CPI and MMPI, projective test: Rorschach, TAT and sentence completion test.

SECTION-B

- 1. **Learning:** Definition: List the laws of learning as proposed by Thorndike. Types of learning: Briefly describe, classical conditions, operant conditioning, insight, observation and Trial and Error type list the effective ways to learn: Massed Vs. Spaced, Whole Vs. Part, Recitation Vs. Reading, Serial Vs. Free Recall, knowledge of results, Association Organization, Mnemonic methods, incidental Vs. Intentional learning, role of language.
- 2. **Thinking:** Definition, concepts, creativity, steps in creative thinking, list the traits of creative people, delusions.
- 3. **Frustration:** Definition, sources, solution, Conflict; Approach – approach, Avoidance – avoidance, and approach – avoidance solution.
- 4. **Sensation, Attention and Perception**
 - a) List of Senses: Vision, Hearing, Olfactory, Gustatory and cutaneous sensation, movement, equilibrium and visceral sense. Define attention and list factors that determine attention: nature of stimulus intensity, colour, change, extensity, repetition, movement size, curiosity, primary motives.
 - b) Define perception and list the principles of perception: Figure ground, constancy, similarity, proximity, closure, continuity values and interests, past experience context, needs, moods, religion, sex and age, perceived susceptibility perceived seriousness, perceived benefits and socioeconomic status.
 - c) Define illusion and hallucination.
 - d) List visual, auditory, cutaneous, gustatory and olfactory hallucination.

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PART-II

5. **Democratic and Authoritarian Leadership:** Qualities of leadership: Physical factors, intelligence, self-confidence, sociability, will and dominance. Define attitude. Change of attitude by: Additional information, changes in-group – affiliation, enforced modification by law and procedures that affect personality. (Psychotherapy, Counseling and religious conversion).
6. **Defence Mechanisms of the Ego:** Denial, rationalization, projection, reaction formation, identification, repression, emotional insulation, undoing, interjection, acting out depersonalization.

SECTION-C

Health Psychology

1. **Psychological Reactions of a Patient:** Psychological reactions of a patient during admission and treatment anxiety, shock, denial, suspicion, questioning, loneliness, regression, shame, guilt, rejection, fear, withdrawal, depression, egocentricity, concern about small matters, narrowed interests, emotional over reactions, perpetual changes, confusion, disorientation, hallucinations, delusions, illusions, anger, hostility, loss of hope.
2. **Reactions to Loss:** Reactions to loss, death and bereavement shock and disbelief, development of awareness, restitution, resolution. Stages of acceptance as proposed by Kubler – Ross.
3. **Stress:** Physiological and Psychological relation to health and sickness: psychosomatic, professional stress burnout.
4. **Communications:**
 - a) Types verbal, non-verbal, elements in communication, barriers to good communication, developing effective communication, specific communication techniques.
 - b) Counseling: Definition, Aim, differentiate from guidance, principles in counseling and personality qualities of counseleors.
5. **Compliance:** Nature, factors, contributing to non – compliance, improving compliance.

SECTION-D

1. **Emotional Needs:** Emotional needs and psychological factors in relation to unconscious patients, handicapped patients, bed – ridden patients, chronic pain, spinal cord injury, paralysis, cerebral palsy, burns, amputations, disfigurement, head injury, degenerative disorders, parkinsonism, leprosy, incontinence and mental illness.
2. **Geriatric Psychology:** Specific psychological reactions and needs of geriatric patients.
3. **Pediatric Psychology:** Specific psychological reactions and needs of pediatric patients.
4. **Behavior Modifications:** Application of various conditioning and learning principles to modify patient behaviours.
5. **Substance Abuse:** Psychological aspects of substance abuse: smoking, alcoholism and drug addiction.
6. **Personality Styles:** Different personality styles of patients.

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PART–II

Books Recommended:-

1. Introduction to Psychology - Mums - I.D.P. Co. 4th edition. 1962.
2. Foundation of Psychology - Weld - Publishing House, Bombay. Ist edition. 1948.
3. Introduction to Social Psychology – Akolkar – Oxford Publishing House. 1950
4. Psychology and Sociology – Applied to Medicine – Porter & Alder - W.B. Saunders. 4th edition. 2019.
5. Behavioural Sciences for Medical Undergraduates – Manju Mehta - Jaypee Brothers. 2nd edition. 2009.
6. Elementary Psychology - Mohsin - Moti Lal Banarsi Dass, Delhi. 2002.

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PART-II
PAPER-VII

ESL-221: Environmental Studies (Compulsory Paper)

Time: 3 Hrs.

Max. Marks: 100

Exam Pattern:

End Semester Examination- 75 marks
Project Report/Field Study- 25 marks
[based on submitted report]

Instructions for the Paper Setters:- 75 marks

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

Project Report / Internal Assessment:

Field Study – 25 marks [Field Study equal to 5 lecture hours]

The candidate will submit a hand written field work report showing photographs, sketches, observations, perspective of any topic related to Environment or Ecosystem. The exhaustive list for project report/area of study are given just for reference:

1. Visit to a local area to document environmental assets: River / Forest/ Grassland/ Hill / Mountain / Water body / Pond / Lake / Solid Waste Disposal / Water Treatment Plant / Waste water Treatment Facility etc.
2. Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
3. Study of common plants, insects, birds
4. Study of tree in your areas with their botanical names and soil types
5. Study of birds and their nesting habits
6. Study of local pond in terms of waste water inflow and water quality
7. Study of industrial units in your area. Name of industry, type of industry, Size (Large, Medium or small scale)
8. Study of common disease in the village and basic data from community health centre
9. Adopt any five young plants and photograph its growth
10. Analyze the Total dissolved solids of ground water samples in your area.
11. Study of Particulate Matter (PM_{2.5} or PM₁₀) data from Sameer website. Download from Play store.
12. Perspective on any field on Environmental Studies with secondary data taken from Central Pollution Control Board, State Pollution Control Board, State Science & Technology Council etc.

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PART–II

Section-A

1. The multidisciplinary nature of environmental studies

Definition, scope and importance, Need for public awareness

2. Natural Resources: Renewable and non-renewable resources:

Natural resources and associated problems.

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

Section-B

3. Ecosystems

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

4. Biodiversity and its conservation

- Introduction – Definition: genetic, species and ecosystem diversity
- Biogeographical classification of India
- Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
- Biodiversity at global, national and local levels
- India as a mega-diversity nation
- Hot-spots of biodiversity
- Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
- Endangered and endemic species of India
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

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PART-II

Section-C

5. Environnemental Pollution

Définition

- Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear pollution
- Solid waste management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution
- Pollution case studies
- Disaster management: floods, earthquake, cyclone and landslides

6. Social Issues and the Environment

- From unsustainable to sustainable development
- Urban problems and related to energy
- Water conservation, rain water harvesting, watershed management
- Resettlement and rehabilitation of people; its problems and concerns. Case studies.
- Environmental ethics: Issues and possible solutions
- Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case studies.
- Wasteland reclamation
- Consumerism and waste products
- Environmental Protection Act, 1986
- Air (Prevention and Control of Pollution) Act, 1981
- Water (Prevention and control of Pollution) Act, 1974
- Wildlife Protection Act
- Forest Conservation Act
- Issues involved in enforcement of environmental legislation
- Public awareness

Section-D

7. Human Population and the Environment

- Population growth, variation among nations
- Population explosion – Family Welfare Programmes
- Environment and human health
- Human Rights
- Value Education
- HIV / AIDS
- Women and Child Welfare
- Role of Information Technology in Environment and Human Health
- Case Studies

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PART-II

Field Work

- Visit to a local area to document environmental assets river/forest/ grassland/ hill/ mountain
- Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
- Study of common plants, insects, birds
- Study of simple ecosystems-pond, river, hill slopes, etc

Field work comprises of 5 hours of field work / visit/ assignment to be submitted by each candidate to the Teacher in-charge for evaluation latest by 1st week of before the commencement of theory exam.

OR

**ADVISORY FOR PUSHPA GUJRAL SCIENCE CITY,
KAPURTHALA :**

The Under Graduate students studying Environmental Studies (Compulsory Paper for All UG College Courses) may be taken to Pushpa Gujral Science City, Kapurthala in lieu of Field study report of 25 marks.

Although students will submit a hand written reports with pictures/ graphs/ tables related to biodiversity, ecology, health, biotechnology, energy, water etc. in about 10 pages to the teacher in-charge.

Above advisory is issued to promote scientific temperament in undergraduate classes and is optional. Further, the report will only be considered if there will be a minimum strength of 25 students along with deputed teacher by the college.

References:

1. Bharucha, E. 2005. Textbook of Environmental Studies, Universities Press, Hyderabad.
2. Down to Earth, Centre for Science and Environment, New Delhi.
3. Heywood, V.H. & Waston, R.T. 1995. Global Biodiversity Assessment, Cambridge House, Delhi.
4. Joseph, K. & Nagendran, R. 2004. Essentials of Environmental Studies, Pearson Education (Singapore) Pte. Ltd., Delhi.
5. Kaushik, A. & Kaushik, C.P. 2004. Perspective in Environmental Studies, New Age International (P) Ltd, New Delhi.
6. Rajagopalan, R. 2011. Environmental Studies from Crisis to Cure. Oxford University Press, New Delhi.
7. Sharma, J. P., Sharma. N.K. &Yadav, N.S. 2005. Comprehensive Environmental Studies, Laxmi Publications, New Delhi.
8. Sharma, P. D. 2009. Ecology and Environment, Rastogi Publications, Meerut.
9. State of India's Environment 2018 by Centre for Sciences and Environment, New Delhi
10. Subramanian, V. 2002. A Text Book in Environmental Sciences, Narosa Publishing House, New Delhi.

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PART–III

PAPER–I: ORTHOPAEDICS

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION–A

- 1. Introduction to Orthopaedics:** Introduction to orthopaedic terminology. Types of pathology commonly dealt with, clinical examination, common investigations X- rays & imaging techniques and outline of non – operative management.
- 2. Principles of Operative Treatment:** List indications, contraindication and briefly outline principles of: Athrodesis, Arthroplasty, Osteotomy, Bonegrafting, Tendon – Transfers and Arthroscopy.
- 3. Sprains and Muscle Strains:** List common sites of sprains and muscle strains and describe the clinical manifestations and treatment. Viz. tennis elbow, golfer's elbow, Dequervan's disease, tenovaginitis, trigger finger, carpal tunnel syndrome and plantar fascitis.
- 4. Sports Injuries:** Injuries related to common sports their classification and management.
- 5. Fractures and Dislocations:** General Principles, outline the following:
 - i) Types of Fractures including patterns. Open and closed fractures and fracture – dislocations.
 - ii) Differences between dislocation & subluxation.
 - iii) General & Local signs & symptoms of fractures & dislocation.
 - iv) Principle of management of fractures & dislocations.
 - v) Prevention & treatment of complication including: Fracture – disease, Volkmann's ischaemic contracture, Sudeck's Atrophy, Carpal Tunnel Syndrome. Myositis ossificans and shoulder – hand syndrome.
 - vi) Fracture healing.
- 6. Upper Limb Fractures & Dislocations:**
 - a) Enumerate major long bone fractures and joint injuries.
 - b) Briefly describe their clinical features, principles of management and complications.
- 7. Lower Limb Fractures & Dislocations:**
 - a) Enumerate major long bone fractures and joint injuries.
 - b) Briefly describe their clinical features, principles of management and complication.
- 8. Spinal Fractures and Dislocations:** Outline the mechanism, clinical features, principles of management and complications of spinal injuries.
- 9. Recurrent Dislocations:** Outline the mechanism, clinical features, principles of management and complications of recurrent dislocation of the shoulder and patella.

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PART-III

SECTION-B

1. **Amputations:**
 - a) Classify amputations. List indication for surgery,
 - b) Outline pre-operative, operative and prosthetic management.
 - c) Outline prevention and treatment of complications.
2. **Principles of Operative Treatment:** List indications, contraindication and briefly outline principles of: Arthrodesis, Arthroplasty, Osteotomy, Bonegrafting, Tendon – Transfers and Arthroscopy.
3. **Sprains and Muscle Strains:** List common sites of sprains and muscle strains and describe the clinical manifestations and treatment. Viz. tennis elbow, golfer's elbow, Dequervan's disease, tenovaginitis, trigger finger, carpal tunnel syndrome and plantar fascitis.
4. **Bone & Joint Infections:** Outline the etiology, clinical features, management and complications of septic arthritis osteomyelitis, Tuberculosis (including spinal T.B.).
5. **Bone Joint Tumors:** Classify and outline the clinical features, management and complications of the following (benign / malignant bone and joint tumors, osteomas, osteosarcomas, osteoclastomas, Ewing's sarcoma, multiplemyeloma).

SECTION-C

1. **Chronic Arthritis:** Outline of pathology: clinical features, mechanism of deformities, management and complications of Rheumatoid arthritis. Osteoarthritis of major joints and spine, Ankylosing spondylitis.
2. Neck & Back Pain, Painful Arc Syndrome, Tendonitis, Facitis & Spasmodic Torticollis. Outline the above including clinical features and management.
3. **Sports Injuries:** Injuries related to common sports their classification and management.
4. **Spinal Deformities:** Classify spinal deformities and outline the salient clinical features, management and complications of Scoliosis, Kyphosis and Lordosis.

SECTION-D

1. **Poliomyelitis:** Describe the pathology, microbiology, prevention, management and complications of polio. Outline the treatment of residual paralysis including use of orthoses. Principles of muscle transfers and corrective surgery.
2. **Congenital Deformities:** Outline the clinical features and management of CTEV, CDH, Flat foot, vertical talus, limb deficiency (radial club hand and femoral, tibial and fibula deficiencies meningomyelocele, Arthrogryphosis multiplex congenitiae and Osteogenesis imperfecta.
3. **Peripheral Nerve Injuries:** Outline the clinical features and management, including re-constructive surgery of:
4. Radial, Median and Ulnar Nerve Lesions.
5. Sciatic and Lateral Popliteal Lesions.
6. Brachial Plexus injuries including Erbs, Klumpke's and crutch palsy.
7. **Hand Injuries:** Outline of clinical features, management and complications of : Skin and soft tissue injury, tendon injury, bone and joint injury.
8. **Leprosy:** Outline of clinical features, management and complications of neuritis, muscle paralysis, tropic ulceration and hand & feet deformities.

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PART-III

PRACTICALS

After the completion of course, students will be able to demonstrate the following:

1. To demonstrate the findings of various investigatory procedures and special tests for traumatic and non-traumatic orthopedic conditions.

Books Recommended:

1. Watson–Zones, Fractures and Joint Injuries –Wilson–ChurchillLivingstone.7th edition ,2009
2. Clinica Orthopaedic Examination–Mcrae–ChurchillLivingstone.5th edition,2004
3. Concise System of Orthopaedics and Fractures– Apley–Butterworth Heinmann.11th edition,2017
4. Outline of Fractures–Adam–Churchill Livingstone.12th edition,2007
5. Outline of Orthopaedics –Adam–Churchill Livingstone. 13th edition,2001
6. Physical Examination in Orthopaedics–Apley– Butterworth Heinmann.1st edition,1997
7. Clinical Orthopaedics Diagnosis–Pandey & Pandey–JaypeeBrothers.4th edition,2018

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PART-III

PAPER-II: GENERAL MEDICINE

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. **Introduction** to modes of transfer of communicable diseases & general preventive measures.
2. **Bacterial** Diseases: Tuberculosis, Leprosy, Rheumatic fever, Tetanus, Diphtheria, Pneumonia, Bacillary Dysentery, Typhoid.
3. **Viral** Diseases: Herpes – simplex and zoster, Varicella, Measles, Mumps, Hepatitis B & C, AIDS & influenza.
4. **Metabolic and Deficiency** Diseases: Diabetes, Vitamin & Nutritional Deficiency diseases, diseases of the Endocrine glands.

SECTION-B

1. **Diseases** of Respiratory System: Asthma, Massive collapse of lungs, Bronchiectasis, lung abscess, COPD-Emphysema and Chronic Bronchitis, Pleural effusion and Empyema, chest wall deformities.
2. **Diseases** of Circulatory System: Thrombosis, Embolism, Gangrene, Hemorrhage, diseases of blood forming organs, Peripheral Vascular diseases, diseases of the lymphatic systems
Diseases of the heart – Hypertension, Aortic aneurysm, Endocarditis, Pericarditis, Aortic Regurgitation and Valvular Diseases, Cardiac failure, coronary heart diseases, congenital heart malformation and its manifestation.
3. **Hematology:** Anemia, Leukaemia, Leucocytosis

SECTION-C

1. **Diseases** of Digestive System: Hematemesis, Pyloric stenosis, Dyspepsia, Vomiting, Diarrhoea, Gastric ulcer and Duodenal ulcer.
2. **Diseases** of Liver: Jaundice, Cirrhosis of liver, Abscess of liver, Ascitis; Encephalopathy.
3. **Diseases** of Kidney: Polyuria, Hematuria, Uremia, Anuria, Glomerulonephritis, Urinary infections, Urinary calculi.

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PART-III

SECTION-D

Diseases of Skin:

1. **Characteristics** of normal skin, abnormal changes, types of primary and secondary skin lesions.
2. **Conditions** – Leprosy, Acne, Carbuncles, Impetigo, Infections of skin, Urticaria, Psoriasis, Skin disorders associated with circulatory disturbance, Defects in Pigmentation, Leucoderma, Fungal infections, Alopecia, Dermatitis and Eczema, Skin allergies, Venereal diseases(STD).

Psychiatry:

1. **Introduction:** Definition, defence mechanism, symptomatology, types & causes of mental disorders, psychosomatic disorders.
2. **Disorders:**
 - a) Psychosis – Schizophrenia (including paranoid), maniac depressive psychosis, involvement psychosis.
 - b) Psychoneurosis – Anxiety, hysteria, anxiety states, depression, obsessive compulsive neurosis.
 - c) Organic reaction to – toxins, trauma & infection.
 - d) Senile dementia.
3. **Mental** retardation – Definition, causes, manifestation and management.
4. **Therapies:**
 - a) Psychotherapy – Group therapy, Psychodrama, behaviour modification, family therapy, play therapy, psychoanalysis, hypnosis.
 - b) Drug therapy
 - c) Electro convulsive therapy

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PART–III

PRACTICALS

Students should be able to demonstrate these clinical skills which include:

1. Clinical History taking,
2. Vitals such as B.P measurement, Pulse, Temperature measurement, Respiratory Rate measurement,
3. General physical examination and Systemic examination of Cardiovascular system, Respiratory System and Abdomen.

Students will have the knowledge of:

1. Basics of cardiopulmonary resuscitation
2. Basics of ECG
3. Basics of ABG
4. Pulmonary function test
5. Ascitic Tap
6. Postural Drainage
7. Intubation

Books Recommended:-

1. Davidson's Principles and Practices of Medicine - Edward - Churchill Livingstone, 24th Edition, 2022.
2. Hutchinson's Clinical Methods - Swash - Bailliere Tindall, 25th Edition, 2022.
3. A Short Text Book of Medicine - Krishna Rao - Jaypee Brothers-. 4th edition, 2020.
4. A Short Text Book of Psychiatry - Ahuja Niraj - Jaypee Brothers, 7th Edition, 2011.

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PART-III

PAPER-III: PHYSIOTHERAPY IN ORTHOPAEDIC CONDITIONS

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Introduction Brief review of the following surgical condition and various physiotherapeutic modalities, aims, means and technique of physiotherapy should be taught.

Traumatology General physiotherapeutic approach for the following conditions:

Fracture and dislocations: Classification and type of displacement, method of immobilisation, healing of fractures and factors affecting union, non-union, delayed union etc. common sites of fractures.

Specific fractures and their complete physiotherapeutic management.

Upper Limb; Clavicle, humerus, ulna, radius, crush injuries of hand.

Lower Limb; fracture neck of femur, shaft of femur patella tibia fibula, pott's fracture, fracture of tarsal and metatarsals.

Spine; fracture and dislocations of cervical, thoracic and lumbar vertebrae with and without neurological deficits.

SECTION-B

Surgical procedures: Pre and post-operative management of common corrective procedure like arthroplasty, arthrodesis, osteotomy, tendon transplants, soft tissue release grafting, including polio residual paralysis and leprosy deformities corrections.

Injuries: Soft tissue injuries, synovitis, capsulitis volkman's ischemic contracture etc. tear of semilunar cartilage and cruciate ligaments of knee, meniscectomy, patellectomy, internal derangement of knee.

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PART-III

SECTION-C

Amputation: level of amputation of upper limb and lower limb, stump care, stump bandaging, pre and post prosthetic management including check out of prosthesis, training etc.

Deformities: congenital torticollis and cervical rib, CTEV, Pes cavus, pes planus and other common deformities.

Acquired – Scoliosis, kyphosis, lordosis, coxa vara, genu valgum, genu varum and recurvatum.

SECTION-D

Degenerative and infective conditions: osteoarthritis of major joints, spondylosis, spondylitis, spondylolisthesis, PIVD, Periarthritis of shoulder, Tuberculosis of spine, bone and major joint, perthes disease. Rheumatoid arthritis, Ankylosing spondylitis etc. and other miscellaneous orthopaedic conditions treated by physiotherapy.

Principles of sports physiotherapy: causes of sports injury, prevention of sports injuries, management of acute sports injury, common occurred injuries. Role of physiotherapist in sports, principle & advanced rehabilitation of the injured athlete.

PART-III

PRACTICALS

Practicals shall be conducted for all the relevant topics discussed in theory in the following forms:

1. Bedside case presentation and case discussion.
2. Various physiotherapy modalities, treatment techniques, practice session and assessment methods to be demonstrated and practiced by the students in clinical setup.

Books Recommended:-

1. Cash text book of Orthopaedics and Rheumatology for Physiotherapists – Downie - Jaypee Brothers, 1992.
2. Tidy's Physiotherapy – 12th Edition, Thomson et al -Butterworth Heinmann, 1991.
3. Essentials of orthopaedics and applied physiotherapy 4th Edition – Joshi and Kotwal - B.L. Churchill Livingstone, 2020.
4. Tetraplegia & Paraplegia 6th Edition- Bromley - W.B. Saunders, 2006.
5. Orthopaedic Physiotherapy 4th Edition - Donatelli & Wooden - W.B. Saunders, 2009.
6. Rheumatological Physiotherapy - David – Mosby, 1998.
7. Orthopaedic Physiotherapy - Tidswell – Mosby, 1992.
8. Physiotherapy for Amputee, 2nd Edition - Engstrom & Van de van - Churchill Livingstone, 1993.
9. Sports Injuries: Diagnosis and Management, 3rd Edition - Norris Butterworth Heinmann, 2004.

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PART-III

PAPER-IV: PHYSIOTHERAPY IN MEDICAL CONDITIONS

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Review of the Pathological and principles of management by Physiotherapy to the following conditions:

1. Inflammation – acute, chronic and suppurative.
2. Oedema – Traumatic, obstructive, Paralytic, Oedema due to poor muscle and laxity of the fascia.
3. Arthritis and Allied Conditions (in details):
 - a) Osteo – arthritis – generalised, Degenerative and traumatic, Spondylosis and disorders.
 - b) Rheumatoid Arthritis, Still's disease, infective Arthritis.
 - c) Spondylitis, Ankylosing Spondylitis.
 - d) Nonarticular Rheumatism – Fibrositis, Myalgia, bursitis, Periarthritis etc.
4. Common Musculoskeletal disorders of Geriatrics patient.

SECTION-B

1. Common conditions of Skin – Acne, Psoriasis, Alopecia, Leucoderma, Leprosy, Sexually transmitted diseases.
2. Deficiency diseases – Rickets, Diabetes, Obesity, Osteoporosis and other deficiency disorders related to Physiotherapy.
3. Psychiatric Disorders – Psychosis, Psychoneurosis, Senile dementia.

SECTION-C

1. Review of mechanism of normal respiration.
2. Chest examination, including auscultation, percussion.
3. Knowledge of various investigative procedures (invasive & noninvasive) used in the diagnosis of various respiratory disorders.

Review of pathological changes and principle of management by physiotherapy of the following conditions:

1. Bronchitis, Asthma, Lung abscess, Bronchiectasis, Emphysema, COPD.
2. Pleurisy and Empyema, Pneumonia.
3. Bacterial Disease.
4. Rheumatic fever, Carcinoma of respiratory tract.
5. Paralysis of diaphragm & vocal cords.
6. Chest wall deformities.

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PART-III

SECTION-D

1. Review of anatomy & physiology of the cardiovascular system.
2. Knowledge of various investigative procedures (invasive & noninvasive) used in the diagnosis of various cardiovascular disorders.
3. Review of pathological changes and principle of management by physiotherapy of the following conditions:
4. Thrombosis, Embolism, Buerger's diseases, Arteriosclerosis, Thrombophlebitis, Phlebitis, Gangrene, Congestive Cardiac failure. Hypertension, Hypotension, aneurysm.

PART-III

PRACTICALS

After the completion of course students will be able to demonstrate the following:

1. To demonstrate the physiotherapy of the degenerative orthopaedic conditions.
2. To demonstrate the chest physiotherapy of the pulmonary conditions.
3. To demonstrate the physiotherapy of the cardiac conditions.

Books Recommended:-

1. Cash Text book of General Medical and Surgical Conditions for Physiotherapists-Downie-Jaypee Brothers.4 edition, 2013
2. Essentials of Cardiopulmonary Physical Therapy-Hillegass & Sadowsky- W.B.Saunders. 2 edition, 2018
3. Cash Textbook of Chest, Heart and Vascular Disorders for Physiotherapists-Downie-J.P. Brothers. 2018
4. The Brompton Guide to Chest Physical Therapy.1 edition ,2002
5. Cardiopulmonary Physical Therapy-Irwin and Tecklin -Mosby.4 edition,2016
6. Cardiovascular/Respiratory Physiotherapy-Smith & Ball -Mosby. 4 edition, 2016
7. ACSM Guidelines for Exercise Testing and Prescription- ACSM-Williams and Wilkins. 2018
8. Chest Physiotherapy in Intensive Care Unit-Mackenzieetal-Williams and Wilkins. 2018

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PART-III
PAPER-V: RESEARCH METHODOLOGY AND BIOSTATISTICS

Time: 3 Hrs.

Marks: 100

Theory: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Introduction to Research Methodology: Definition, Reasons for Developing Rehabilitation Research, Barriers to Research, Research Process, Types of Research, Research Methods Versus Methodology

Defining the Research Problem: Necessity of Defining Research Problem, Techniques to Define the Research Problem

Research Fundamentals: Measurement in Research, Levels of Measurement, Sampling, Measurement Reliability, Measurement Validity, Research Validity, Variables

Research ethics: importance of ethics in research, ethical issues in Human Subjects Research, Moral Principles of Action, Informed Consent, Research Codes of Ethics, Research Risks.

SECTION-B

Research Design: Definition, Need of Research Design, Features of Good Research Design

Experimental Research Design: True Experimental Research Designs, and Quasi Experimental Research Designs

Non Experimental Research: Definition, Classification, Description-Retrospective and Prospective Descriptive Research, Analysis of Relationships-Retrospective and Prospective Analysis of Relationship Research, Analysis of Difference-Retrospective and Prospective, Clinical Case Reports, Descriptive Non Experimental Designs, Exploratory non Experimental Designs, Analytical Non Experimental Designs

SECTION-C

Introduction to Biostatistics: Definition, Role in Physiotherapy

Descriptive Statistics and Measures of Variability: Frequency Distributions, Normal Distribution, Measures of Central Tendency, Measures of Variability

Statistical Inference: Sampling Distributions, Standard Error, Confidence Intervals, Hypothesis Testing, Errors in Hypothesis Testing

Comparison of Group Means: T-Test, ANOVA, Multiple Comparison Tests

Non parametric Tests of Significance: Mann-Whitney U test, Kruskal-Wallis one-way analysis of variance by ranks, Wilcoxon signed-rank test, chi-square test

Correlation and Regression Analysis: Scatter plots, Pearson product-moment, coefficient of correlation, Spearman rank correlation coefficient, linear regression line, analysis of covariance (ANCOVA)

Statistical Measures of Reliability: Intraclass correlation coefficient (ICC), Kappa

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PART–III

SECTION–D

Scientific writing : definition, kinds of scientific documents, style manuals, citation styles, different steps in Report writing, structure of thesis, preparation of abstracts, preparing for publication, research proposal process, structure of research proposal, institutional review board, types of research articles, different steps in research writing

Books Recommended:-

1. Methods in Biostatistics – Mahajan - J.P. 9th ed. 2018.
2. Statistics in Medicine - Colton - Little Brown, Boston. 1974
3. Research for Physiotherapist: Project Design and Analysis - Hicks - Churchill Livingstone. 5th ed. 2009
4. Biostatistics: The manual for Statistical methods for use in health and nutrition - K.V. Rao- J.P. 2nd ed. 2007
5. Research methods in Behavioural Sciences - Mohsin - Orient Publications. 1986

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PART-III

PAPER-VI: NEUROLOGY

Time: 3 Hrs.

**Marks: 200
Theory: 100
Practical: 100**

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. **Neuroanatomy:** Review the basic anatomy of the brain and spinal cord including: Blood supply of the brain and spinal cord, anatomy of the visual pathway, connections of the cerebellum and extrapyramidal system, relationship of the spinal nerves to the spinal cord segments, long tracts of the spinal cord, the brachial and lumbar plexus and cranial nerves.
2. **Neurophysiology:** Review in brief the Neurophysiological basis of: tone and disorders of the tone and posture, bladder control, muscle contraction, movement and pain.
3. Assessment and evaluative procedures for the neurological patient.
4. Review of the principles of the management of a neurological patient.

SECTION-B

Outline the etiogenesis, clinical features and management of the following Neurological disorders: -

1. Congenital and childhood disorders – Cerebral palsy, Hydrocephalus and Spina Bifida.
2. Cerebrovascular accidents – General classification, thrombotic, embolic, haemorrhagic & inflammatory, strokes, gross localisation and sequelae.
3. Trauma – localization, first aid and management of sequelae of head injury and spinal cord injury.
4. Diseases of the spinal cord – Craniovertebral junction anomalies, Syringomyelia, Cervical and lumbar disc lesions, Tumors and Spinal arachnoiditis.
5. Demyelinating diseases (central and peripheral) – Guillain – Barre syndrome, Acute disseminated encephalomyelitis, Transverse myelitis and Multiple sclerosis.

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PART-III

SECTION-C

Outline the etiogenesis, clinical features and management of the following Neurological disorders: -

1. Degenerative disorders – Parkinson's disease and dementia.
2. Infections – Pyogenic Meningitis sequelae, Tuberculous infection of central nervous system and Poliomyelitis.
3. Diseases of the muscle – Classification, signs, symptoms, progression and management.
4. Peripheral nerve disorders – Peripheral nerve injuries, Entrapment neuropathies and Peripheral neuropathies.

SECTION-D

1. Epilepsy – Definition, classification and management.
2. Myasthenia Gravis - Definition, course and management.
3. Intracranial Tumors – Broad classifications, signs and symptoms.
4. Motor neuron disease - Definition, classification and management.
5. Cranial nerve – Types of Disorders, clinical manifestation & management.
6. Introduction to neuropsychology.
7. General assessment procedures and basic principles of management.

PRACTICALS

After studying the course, the students will be able to perform the neurological examination of a patient and diagnose the neurological conditions.

Books Recommended:-

1. Harrison's principles of internal medicine -21st edition, March 2022
2. B.D.Chaurasia principles of anatomy-9th edition, September 2022

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PART-IV

PAPER-I: GENERAL SURGERY

Time: 3 Hrs.

**Marks: 200
Theory: 100
Practical: 100**

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. Introduction to principles of surgery and its procedure.
2. Shock – definition, types, clinical feature, pathology & management.
3. Haemorrhage – common sites, complication, clinical features & management.
4. Blood Transfusion – Blood group matching, indication & complication.
5. Anaesthesia – Principles of anaesthesia, types & procedure.

SECTION-B

1. Wounds, Tissue repair, Classification – Acute Wounds, Chronic wounds
2. Scars & their Management.
3. Wound infections: - Psychology and manifestation, Types of infections & their Management.
4. Tumors and Ulcers: -
 - a) Tumors – Types & Management.
 - b) Ulcers – Types & Management.
5. Burns – Causes, Classification, Clinical features & Management.
6. Skin Grafting – Indications, Types & Procedures.
7. Hand Infections – Types & Management.
8. General Injuries – Types & Management.

SECTION-C

Obstetrics & Gynaecology:

1. Complications of Surgery.
2. Abdominal Surgery – Types of Incisions & common surgical procedures.
3. Thoracic and Cardiac Surgery – Types of incisions & common surgical procedures.
4. Pregnancy, stages of labour & its complications, indications & types of surgical procedures.
5. Gynaecological disorders – Salpingitis, parametritis, retro-uterus, prolapse of uterus
6. Pelvic inflammatory diseases, urinary incontinence.

SECTION-D

Ophthalmology:

1. Common inflammations and other infections of eye.
2. Ptosis
3. Blindness – common causes & management.
4. Refractions – testing, errors & remedies
5. Strabismus – types, features & corrective measures.

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PART-IV

Ear, Nose & Throat (ENT):

1. Introduction – Outline, mechanism of audition, olfaction & speech.
2. Classify causes of hearing impairment, assessment techniques, conservative & surgical management.
3. Hearing Aids – types & indications.
4. Outline common ENT infections & lesions, which affect hearing, breathing, speech & their management.
5. Outline the function of vestibular organ, its common disorders & their management.

PRACTICALS

After studying the course, the students will be able to demonstrate the following:-

1. General physical examination.
2. Systemic examination including CVS, Respiratory system, Gastrointestinal system, CNS.

Books Recommended:-

1. Baily and Love - Short Practice of Surgery - Mann and Rains - H.K. Levis Publications, London, 28th edition, 2022.
2. Clinical Methods - S. Das - Calcutta. 16th Edition, 2022.
3. Manual of Surgery- SRB's, 7th edition, 2023.

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PART-IV

PAPER-II: COMMUNITY PHYSIOTHERAPY & REHABILITATION

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

- **Surveillance, Monitoring & Screening in Occupational Health**
 1. Types & purposes of work place health examination
 2. Ethical Issues in health examination in the work place
- **Work Disability**
 1. Definition
 2. Causes & Prevention
 3. Management
- **Ergonomics & Work-related Musculoskeletal disorders**
 1. Fatigue
 2. Chronic work-related musculoskeletal disorders
 3. Occupational low back pain
 4. Management of Work-related Musculoskeletal disorders
 5. Role of physiotherapy in occupational disorders

SECTION-B

- **Industrial Hygiene**
 1. Recognition of Occupational & Environmental Hazards
 2. Hazard Evaluation
 3. Hazard Control
- **Women's Occupational Health Problem**
 1. Musculoskeletal disorders
 2. Stress

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PART-IV

SECTION-C

- **Community Obstetrics**
- **Social Obstetrics**
- **Maternal & Child Health**
 1. Health indicators
 2. Goals of MCH services
- **Role of Physiotherapy in women health-related disorders**
- **Nutrition in Public Health & Preventive Medicine**
 1. Nutritional deficiencies: Causes & Consequences
 2. Balance Diet: Dietary Recommendations
 3. Nutritional disorders in women

SECTION-D

- **Family Planning Programs & Practices**
 1. Goals
 2. Policies & Laws
 3. Effects
 4. Family Planning Problems in Public Health
- **Health Problems of the Aged due to**
 1. Ageing
 2. Illness
 3. Psychological causes
- **Physiotherapy approach to Geriatric Conditions**

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PART-IV

PRACTICALS

At the end of the course, the candidate will be competent to describe the:

1. The general concepts about workplace health, disease and physical fitness.
2. Understand the concept of health care and management in occupational health and its importance at work place, ethical guidelines to follow in health examination at work place.
3. Be able to identify with clinical reasoning the prevailing contextual factors, causing high risk responsible for various dysfunctions and morbidity related to sedentary life style and specific community like women, children, aged as well as industrial workers and describe planning strategies of interventional policies to combat such problems.
4. Role of PT in improving morbidity, expected clinical and functional recovery, reasons for non-compliance in specific community environment and solution for the same.
5. Promote community oriented physiotherapy and extension service through strong community relationships
6. Develop behavioural skills and humanitarian approach while communicating with patients, patient caregivers, society and co-workers to promote individual and community health.
7. Physiology of aging process and its influence on physical fitness.
8. Learn, understand and implement ethical guidelines regarding patient privacy in the clinical settings.
9. Make people aware about family planning and different policies and schemes of Indian government related to it.
10. The student will be able to have a community based perspective with Physiotherapeutic approach.
11. Be able to gain the ability to collaborate with other health professionals for effective service delivery & community satisfaction.
12. Be able to conduct a small project to access the prevalence of specific physical health problem and /or morbidity in specific community which may be based at the institutional level or in field.
13. All the practical work should be properly documented, signed by the teacher in-charge of the subject and should be submitted before the final examination. It is the responsibility of the student to submit the file(s) to the teacher before the examination.

Books Recommended:

1. Community Rehabilitation Services for People with Disabilities – Orv C. Karan, Stephen Greenspan – Health Sciences, 1st edition, 2014.
2. Ghai Essential Pediatrics – O. P. Ghai, Vinod K. Paul and Arvind Bagga – CBS Publishers & Distributors, 10th edition, 2023.
3. Guccione's Geriatric Physical Therapy – Dale Avers & Rita Wong – Mosby, 4th edition, 2020.
4. Krusen's Handbook of Physical Medicine & Rehabilitation – Kottke & Lehmann – W.B. Saunders, 4th edition, 1990.
5. Physiotherapy in Obstetrics and Gynecology – Jill Mantle, Jeanette Haslam, Sue Barton – Butterworth-Heinemann, 2nd edition, 2004.

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PART-IV

PAPER-III: PAEDIATRICS & GERIATRICS

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Paediatrics:

1. APGAR SCORE and Neonate Resuscitation
2. Neonatology
3. Assessment of a neonate.
4. Development of a normal child – neuromotor, physical growth, cognitive, intellectual, social etc.
5. The examination & assessment of a pediatric patient.
6. Congenital & acquired musculo skeletal disorders – etiology, clinical manifestation & principles of management.
7. Congenital & acquired Cardio - pulmonary disorders – etiology, clinical manifestation & principles of management.
8. SAM (Severe Acute Malnutrition)
9. CDH (Congenital Dislocation of Hip), Club Foot (CTEV)
10. National Immunization Schedule
11. Diarrhea & its management

SECTION-B

1. Congenital & acquired neurological disorders (CNS & PNS) – etiology, clinical manifestation & principles of management.
2. Hereditary disorders - etiology, clinical manifestation & principles of management.
3. Nutritional Vitamins Deficiency & Development Disorders – etiology, clinical manifestation & principles of management.
4. Burns, Injuries & accident – Types & principles of management, including preventive care.
5. Surgical intervention – Indications & common surgical procedure.

SECTION-C

Geriatrics:

1. Normal aging – definition, the anatomical, physiological and cognitive changes related to aging.
2. Epidemiology and socio- economic impact of aging.
3. The examination & assessment of a geriatric patient.
4. Musculo skeletal disorders – etiology, clinical manifestation & principles of management.
5. Cardio - pulmonary disorders – etiology, clinical manifestation & principles of management.

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PART-IV

SECTION-D

1. Neurological disorders (CNS & PNS) – etiogenesis, clinical manifestation & principles of management.
2. Diet & Nutritional requirement of the elderly. Nutritional disorders & their management.
3. Burns, Injuries & accident as related to the elderly & preventive care.
4. Dementia – Types and principles of management.
5. Overview of depressive disorders in the elderly.

PRACTICALS

Students should be able to demonstrate these clinical skills in paediatric and geriatric patient which includes:

1. Clinical History taking,
2. Vitals such as B.P measurement, Pulse, Temperature measurement, Respiratory Rate measurement,
3. General physical examination and Systemic examination of Cardiovascular system, Respiratory System and Abdomen and Nervous system and Reflexes.

Students will have the knowledge of:

1. Resuscitation of newborn
2. Evaluation of newborn
3. Breastfeeding
4. Management of jaundice in newborn
5. Management of shock in newborn
6. Central venous cannulation
7. Lumbar puncture
8. Bone marrow aspiration and biopsy
9. Basics of dialysis
10. Nasogastric tube insertion
11. Urinary

Books Recommended:-

1. Nelson's Textbook of Paediatrics - Behrman & Vaughan - W.B. Saunders. 21st edition, 2019.
2. Textbook of Paediatrics - Parthasarthy - Jaypee. 7th edition, 2019.
3. The Short Textbook of Paediatrics - Gupte - Jaypee. 13th edition, 2019.
4. Geriatric Physical Therapy - Guccione - Mosby. 4th edition, 2012.
5. Motor Assessment of the Developing infant - Piper & Davrah - W.B. Saunders. 2nd edition.

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PART-IV

PAPER-IV: PHYSIOTHERAPY IN NEUROLOGICAL CONDITIONS

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. Examination of Neurological disorders and principles of treatment.
2. Knowledge of various investigative procedures (invasive & noninvasive) used in the diagnosis of various neurological disorders.

SECTION-B

1. Review of pathological changes and principles of management by physiotherapy of the following conditions:
 - a) Hemiplegia, Paraplegia, Tabes dorsalis, cerebellar ataxia, extra pyramidal lesions, Gullian Barre Syndrome, Parkinsonism.
 - b) Disseminated sclerosis, Amyotrophic lateral sclerosis, Syringomyelia subacute combined degeneration of spinal cord, motor neuron disease.
 - c) Peripheral Nerve and cranial Nerve lesions.
 - d) Neuritis and Neuralgia – Brachial, sciatic etc.
 - e) Infections – Poliomyelitis, meningitis, Encephalitis, Polyneuritis, Transverse myelitis.
 - f) Traumatic head injuries and spinal cord injury.

SECTION-C

1. Review of the examination & assessment of a Paediatric patient.
2. Review of pathological changes and principle of management by physiotherapy of the following Paediatric conditions:
 - a) Common congenital & acquired musculoskeletal disorders.
 - b) Common congenital & acquired neurological disorders (CNS & PNS).
 - c) Common hereditary disorders.
 - d) Common nutritional, metabolic & vitamin deficiency disorders related to neurological conditions.
 - e) Cerebral palsy, myopathy and muscular dystrophies.

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PART-IV

SECTION-D

1. Review of the examination & assessment of a Geriatric patient.
2. Review of pathological changes and principle of management by physiotherapy of the following Geriatric conditions:
 - a) Neurological disorders of Central Nervous System.
 - b) Neurological disorders of Peripheral Nervous System.
 - c) Injuries & accidents specific to the aged.
 - d) Fall injuries related to Neurological disorders.

PRACTICALS

After the completion of course students will be able to demonstrate the following:

Various Physiotherapy modalities and treatment techniques for above mentioned conditions should be demonstrated and practiced by the students.

1. Demonstration of strengthening exercises to improve muscle strength.
2. Demonstration of balance exercises for the improvement of balance.
3. Demonstration of gait training to improve walking.
4. Demonstration of Frenkel's exercises to improve incoordination.
5. To study Application of modalities such as TENS, IFT will be given to relieve pain. Wax bath, hydrocollator packs, UVR, IR, US and muscle stimulator where ever applicable.
6. To study application of Splints, orthotics and other assistive devices such as walking stick, tripod or tetrapod stand, walking frame will be prescribed according to the requirement of the patients.

Books Recommended:

1. Cash's Textbook of Neurology for Physiotherapists - Downi - J.P. Brothers. 4th ed. 1993.
2. Adult Hemiplegia – Evaluation & Treatment - Bobath - Oxford Butterworth Heinmann. 2nd edition. (1978)
3. Neurological Rehabilitation – Carr & Shepherd -Butterworth Heinmann. 2nd ed. 2010
4. Tetraplegia & Paraplegia – A Guide for Physiotherapist - Bromley - Churchill Livingstone. 6th ed. 2006
5. Neurological Physiotherapy – A Problem Solving Approach - Susan Edwards - Churchill Livingstone. 2nd ed. 2001
6. Neurological Rehabilitation - Umpherd - Mosby. 6th ed. 2012.
7. Geriatric Physical Therapy - Gucciona – Mosby 4th ed. 2012..
8. Motor Assessment of Developing Infant - Piper & Darrah - W.B, Saunders. 2nd ed. 2021.
9. Paediatric Physical Therapy - Teckling - Lippincott. 6th ed. 2021.
10. Treatment of Cerebral Palsy and Motor Delay - Levitts - Blackwell Scientific Publications, London. 6th ed. 2018.
11. Aging the Health Care Challenge - Levis - F.A. Davis. 4th ed. 2002
12. Physiotherapy in Paediatrics - Shepherd - Butterworth Heinmann. 3rd ed. 1995

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PART-IV

PAPER-V: PHYSIOTHERAPY IN SURGICAL CONDITIONS

Time: 3 Hrs.

Marks: 200

Theory: 100

Practical: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

Review of pathological changes and principle of pre and post-operative management by physiotherapy of the following conditions:

1. Lobectomy, Pneumonectomy, Thoracotomy, Thoracoplasty, Endoscopy & eye hole surgeries.
2. Corrective surgeries of congenital heart defects, angioplasties, blood vessel grafting, open heart surgeries & heart transplant.

SECTION-B

Review of pathological changes and principle of pre and post-operative management by physiotherapy of the following conditions:

1. Common abdominal surgeries, including GIT, liver, spleen, kidney, bladder etc.
2. Common operation of reproductive system, including surgical intervention for child delivery. Ante natal & post-natal, physiotherapy
3. Common operations of the ear, nose, throat & jaw as related to physiotherapy.
4. Common organ transplant surgeries – heart, liver, bone marrow etc.

SECTION-C

Review of pathological changes and principle of pre and post-operative management by physiotherapy of the following conditions:

1. Wounds, ulcers, pressure sores.
2. Burns & their complications.
3. Common reconstructive surgical proceedings of the management of wounds, ulcers, burns & consequent contractures & deformities.
4. Review of pathological changes and principle of pre and post operative management by physiotherapy of the following conditions:
 1. Common surgeries of the cranium & brain.
 2. Common surgeries of vertebral column & spinal cord.
 3. Common surgeries of peripheral nerves.
 4. Surgical interventions in traumatic head injuries.

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PART-IV

SECTION-D

1. Intensive Therapy – Clinical Management
2. Intensive Therapy – Apparatus (Ventilations, Tubes, Humidifiers etc.)
3. Intensive Therapy – Adult Patient
4. Paediatric & Neonatal Intensive Therapy

PRACTICALS

After the completion of course students will be able to demonstrate the following:

1. To demonstrate the pre and post operative chest physiotherapy rehabilitation of the pulmonary surgical conditions.
2. To demonstrate the pre and post operative physiotherapy rehabilitation of the cardiac conditions.
3. To demonstrate the pre and post operative physiotherapy rehabilitation of the neurological conditions.
4. To demonstrate the antenatal and post natal physiotherapy.
5. To demonstrate the application of Intensive Unit apparatus.

Books Recommended:

1. Cash Text book of general medical and surgical conditions for physiotherapists–Downie–Jaypee Brothers. 4 edition, 2012.
2. Cash text book of heart,chest and vascular disorders for physiotherapists–Downie–Jaypee Brothers.4 edition, 2012.
3. Principles and practices ofcardiopulmonary physical therapy– Frown Felter–Mosby.4 edition, 2002.
4. Chest physiotherapy in intensive care unit–Mackenzie–Williams & Wilkins.2018
5. Restoration of Motor Functions in stroke patient: A Physiotherapist Approach–Johnstone–Churchill Livingstone.
6. Physiotherapy in obstetrics and gynaecology–Polden–F.A. Davis. 2016.

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PART-IV

PAPER-VI: REHABILITATION, ORGANIZATION AND ADMINISTRATION

Time: 3 Hrs.

M. Marks: 100

Theory: 100

Instructions for the Paper Setters:-

Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

SECTION-A

1. Conceptual framework of rehabilitation, roles of rehabilitation team members, definitions and various models of rehabilitation
2. Epidemiology of disability with emphasis on locomotor disability, its implications – individual, family, Social, economic and the state.
3. Preventive aspects of disability and organizational skills to manage it.
4. Community Based Rehabilitation and out reach programmes to rehabilitate persons with disabilities living in rural areas.
5. Statutory provisions, Schemes of assistance to persons with disability.
6. Role of N.G.Os in rehabilitation of the persons with disabilities.
7. Basic principles of administration and finance including personnel management and budget preparation and procurement etc.

SECTION-B

1. Principles of Orthotics – types, indications, contra-indications, assessment (check out), uses and fitting – region wise.
2. Fabrication of simple splints and self help devices for upper and lower extremity – indications and application.
3. Principles of Prosthetics – types, indications, contra-indications, assessment (check out), uses and fitting – upper and lower extremity.

SECTION-C

1. Principles and mechanisms of Communication including speech and hearing.
2. Common disorders of speech and hearing – etiology, clinical features, assessment and principles of management.
3. Principles in the management of vocational problems, including evaluation and vocational goals for people with disability.
4. Principles of rehabilitation Nursing, including function of Nursing personnel and Nursing practice in rehabilitation.

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PART-IV

SECTION-D

1. Identification, assessment and classification of mentally subnormal.
2. Etiogenesis and principles of management including prevention.
3. Rehabilitation of the mentally subnormal, including vocational training & a home education programme.
4. Definition, scope & importance of Activities of Daily Living (ADLs).
5. The teaching and training of (a) wheel chair activities, (b) bed activities (c) transfer activities (d) Locomotor activities (e) self care activities, such as toilet, eating, dressing etc.
6. Principles of occupational therapy including evaluation and goals for people with disability.

Books Recommended:-

1. Physical Rehabilitation –assessment & Treatment–Sullivan & Schmitz–F.A.Davis. 2 edition, 2010.
2. Occupational Therapy and Physical disfunction: Principles, Skills & Practices–Turner, Foster & Johnson– Churchill Livingstone. 2 edition, 2014.
3. Hand Splitting–Wilson–W.B.Saunders.3 edition, 2018.
4. Orthotics in Rehabilitation: Splinting the hand and the body–Mckee & Morgan–F.A.Davis. 6 edition 2016.
5. Atlas of Limb Prosthetics –American Academy of Orthopaedic Surgeon– Mosby.2016.
6. Atlas of Orthotics –American Academy of Orthopaedic Surgeon–Mosby.2016.
7. Krusen’s Handbook of Physical Medicine & Rehabilitation–Kottke & Lehmann– W.B.Saunders.3 edition.2018.
8. Willard and Spackman’s occupational therapy–Neistadt & Crepeau–Lippincott. 4 edition, 2018.

**BACHELOR OF PHYSIOTHERAPY (ANNUAL SYSTEM)
SYLLABUS FOR THE BATCH FROM YEAR 2025 TO YEAR 2029**

PART-IV

PAPER-VII: COMPUTER APPLICATIONS

M. Marks: 50

PRACTICALS

Note: Only Practical examination will be conducted for this paper.

1. To study the various components of a personal computer.
2. To have working knowledge of hardware and software.
3. To practice the operational skills of common computer applications, including word processing & spread sheet software.
4. To have a basic knowledge of utility of multi – media.
5. **To learn skills of web surfing – For literature, researches relevant to the field of medicine.**

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PART-IV

INTERNSHIP / EXTERNSHIP

Rotational six months compulsory internship / externship after the successful completion of the final examination should cover the clinical branches concerned with the physiotherapy such as:

1. Neurology – Neurology IN patient, Neurosurgery, NS-ICU
2. Orthopedics and Trauma Ward
3. Cardiorespiratory and ICU
4. Pediatrics Unit
5. Gynaecology Unit
6. Burns & Plastic Surgery Unit
7. Physiotherapy OPD