SARDAR PATEL UNIVERSITY
Programme & Subject: Bachelor of Physiotherapy - BPT

(4½ Year Degree Course)

Under The Faculty of Medicine
Regulations & Curriculum

(In force for students from academic year 2013-14 and thereafter)

SARDAR PATEL UNIVERSITY

VALLABH VIDYANAGAR

GUJARAT

INDEX

Regulations governing BPT degree course:

a) The Bachelor of Physiotherapy program shall be under the Faculty of Medicine.

b) The name of the Degree program shall be Bachelor of Physiotherapy (BPT).

c) This revised syllabus will be applicable from academic year 2013-14.

AIMS & OBJECTIVES of Bachelor of Physiotherapy (BPT) degree course

a) To provide excellent Physiotherapy educational facilities and optimal ambiance for education and research.

b) To inculcate spirit of critical inquiry, analytical thinking, problem solving and research culture in students, to make a responsible social citizen, with leadership quality recognized nationally and internationally.

c) To provide Physiotherapy services and promote health and wellbeing of people of Charutar region and beyond, equitably, based on best evidences, at an affordable cost.

d) To provide opportunities so the faculties grow and excel in the field of Physiotherapy, to be a leader / torch bearer in responsibility, committed to its stake holders.

ANNEXURE-1

Rules & Regulations for Degree of Bachelor of Physiotherapy (BPT)

R.BPT-1 ELIGIBILITY

a) A candidate applying for the degree of BPT being eligible for admission to the Physiotherapy College affiliated to this university must have:

b) Passed the higher secondary examination of twelfth standard in science stream conducted by the Gujarat Secondary Education Board or its equivalent examination with recognized board.

c) Completed the age of 17 years at the time of admission or will complete this on 31st December of the year of his/her admission to the course.

R.BPT-2 DURATION OF THE COURSE

The duration of the BPT Course shall be four and half years including compulsory rotatory internship of six months.

R.BPT-3 MEDIUM OF INSTRUCTION

English shall be the medium of instruction for all the subjects of study and for the examinations of the BPT course.

R.BPT-4 ELIGIBILITY CRITERIA TO APPEAR IN UNIVERSITY EXAMINATION

Following are compulsory for being eligible to appear at any examination.

a) **Attendance:** A candidate must obtain minimum of 80% attendance in each paper/head of passing.

b) **Internal marks:** A candidate must obtain minimum of 35% marks of internal assessment in each paper for both theory and practical separately. Failing which he/she would not be eligible in that paper(s)/ head of passing.

c) The subsidiary subject in which the college exam will be conducted, a candidate must obtain minimum of 35% of the total marks before appearing for University examination.

R.BPT-5 UNIVERSITY EXAMINATION

a) Candidates desirous of appearing for any examination must forward their applications in the prescribed form to the registrar through the Principal of the institutions on or before the date prescribed for the purpose under the relevant ordinances.

b) No candidate will be allowed to reappear at any Examination in which he/she has already passed.

c) University examinations will be held twice during the year that is one regular and one supplementary examination to be conducted within three months of the declaration of result of the regular exam.

R.BPT-6 INTERNAL ASSESSMENT:

a) The internal assessment shall be based on regular periodic examinations. There shall be at least one internal and one preliminary examination for all years of BPT.

For the purpose of deciding final university results at the FY, SY, TY & Final Year BPT examination, the weightage of internal will be 20% (refer scheme of examination).

1) Internal assessment for repeaters:

2) A candidate who has been declared failed in University examination for FY, SY, TY and Final year BPT is a repeater for said examination /paper/ subject.

3) A candidate compulsorily has to appear for the theory and practical held during the preliminary exam, just prior to university (supplementary) exam, to be eligible for the subsequent University examination in the paper/papers he/she has failed.

4) The internals for the final University examination for FY, SY, TY and Final year BPT would be the best of two internals (1) the internal obtained in the preliminary exams of the University exam he/she is appearing for and (2) the internal marks at the previous university exam, conducted within last one year; or else, the internal marks shall be calculated on the basis of the marks obtained in the preliminary exam (Theory & Practical) just prior to the university exam he/she is appearing for.

5) The eligibility criteria R.BPT-4 shall be applicable for the repeaters.

R.BPT-7 CRITERIA OF PASSING:

a) To pass the FY, SY, TY & Final year examination a student must obtain minimum of 50% marks in external examination in both theory and practicals, in each paper/head of passing separately and minimum of 50 % marks in aggregate of both internal and external, in theory and practical in each paper separately.

b) The student will have to reappear in full paper in theory and practical even if he/she has failed in either theory or practicals or both.

c) Passing in FY/SY/TY BPT Examination is not compulsory before proceeding to SY/TY/Final year BPT respectively.

d) If the candidate is declared failed in any paper/s, he/she will be allowed to appear in supplementary examination.

e) **REPEAT**

If the candidate is declared failed in more than two papers in the supplementary examination of FY/SY/TY/Final year BPT then he/she has to repeat and attend FY/SY/TY/Final year BPT in the subjects of the failed papers along with the coming regular batch of FY/SY/TY/Final year BPT respectively and has to appear for the failed papers along with that batch at the main examination.

f) **CARRY FORWARD**

If the candidate fails in two or less papers in supplementary examination, he/she can appear in the failed paper/s along with the forthcoming BPT course papers with his regular batch; that means he/she can appear in maximum of two papers of first/second/third year along with second/third/final year annual examination respectively.

g) A candidate cannot carry over first year paper to third year; and 2nd year paper to 4th year otherwise, he/she will have to attend the subjects/papers he/she had failed in and will have to clear those before proceeding to the next year BPT course.

h) Same is applicable for passing SY BPT and TY BPT examination.

i) Those who have been declared fail or ineligible to appear for regular examination shall be allowed to take supplementary exam to be conducted within three months of the declaration of result, provided the candidate fulfill the eligibility criteria as per R.BPT-4.

R.BPT-8 DECLARATION OF CLASS

a) A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 75% of marks or more of grand total marks prescribed will be declared to have passed the examination with Distinction.

b) A candidate having appeared in all subjects in the same examination and passed that examination in the first attempt and secures 65% of marks or more but less than 75% of grand total marks prescribed will be declared to have passed the examination in First Class.

c) A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 50% of marks or more but less than 65% of grand total marks prescribed will be declared to have passed the examination in Second Class.

d) A candidate passing the university examination in more than one attempt shall be placed in Pass class irrespective of the percentage of marks secured by him/her in the examination.

R.BPT-9 INTERNSHIP CRITERIA

For the Degree of Bachelor of Physiotherapy, the students after passing the professional examinations as per the syllabi prescribed by the Sardar Patel University (SPU), for FY BPT, SY BPT, TY BPT and Final Year BPT shall undergo SIX MONTHS compulsory rotatory paid (stipendiary allowances) internship training program to develop skill and acquire clinical knowledge with proficiency in managing patients independently. The program of internship shall be as per annexure-7. The internship should be done in SPU recognized institutes/organization limited to Gujarat state as in annexure-8.

ANNEXURE-2

List of subjects of FY, SY, TY & FINAL YEAR BPT

FIRST YEAR BPT

No.	SUBJECT
Main Subjects: For University examination	
1	Human Anatomy
2	Human Physiology
3	Bio-Chemistry
4	Sociology
5	Bio-Medical Physics & Computer Applications
6	Exercise Therapy & Biomechanics-I (inclusive of Massage manipulation)
Subsidiary subjects: Not for University examination	
7	Introduction to Physiotherapy**#**
8	Nursing, First Aid with emphasis on CPR
9	English

 # College examination will be conducted for this subject

SECOND YEAR BPT

No.	SUBJECT
	Main Subjects: For University examination
1	Pathology & Microbiology
2	Pharmacology
3	Medicine-I (General Medicine, Cardio respiratory disorders, Intensive & emergency care)
4	Orthopedics & Traumatology
5	Psychology
6	Exercise Therapy & Biomechanics-II
	Subsidiary subjects: Not for University examination
7	Radiology
8	Yoga and Naturotherapy

THIRD YEAR BPT

No.	SUBJECT
	Main Subjects: For University examination
1	Medicine-II (Neurology & Pediatrics)
2	Surgery (General Surgery & ENT, Cardiothoracic Surgery & Neuro Surgery)
3	Obstetrics & Gynecology
4	Community Medicine
5	Electro Therapy
6	Physical and Functional Diagnosis
	Subsidiary subjects: Not for University examination
7	Dermatology **#**
8	Psychiatry **#**
9	Ophthalmology
10	Acupuncture and magneto therapy

 # College examination will be conducted for these subjects

FINAL YEAR BPT

No.	SUBJECT
	Main Subjects: For University examination
1	Physiotherapy in Neuro-Muscular Condition
2	Physiotherapy in Musculo-Skeletal Conditions
3	Physiotherapy in Cardio-Pulmonary & General Medical- Surgical Conditions
4	Physiotherapy in community health
5	Bio-engineering
6	Bio-Statistics & Research Methodology
	Subsidiary subjects: Not for University examination
7	Introduction to evidence based practice in Physiotherapy**#**
8	Management and Ethics

 # College examination will be conducted for this subject

SUBJECT TRANSCRIPT
Minimum prescribed hours for teaching

No.	Subject		Total Hours	
1	Human Anatomy		350	
2	Human Physiology		250	
3	Bio-chemistry		50	
4	Sociology		40	
5	Physics	Bio medical physics	150	190
		Computer Application	40	
6	Exercise Therapy & Bio mechanics-I (inclusive of massage manipulation) Exercise Therapy & Bio mechanics-II		400	
7	Introduction to Physiotherapy		10	
8	Nursing and First aid with emphasis on CPR		10	
9	English		20	
10	Pathology		50	
11	Microbiology		50	
12	Pharmacology		50	
13	Medicine-I	General Medicine	35	75
		Cardio respiratory disorders, Intensive & emergency care	40	
14	Orthopedics & Traumatology		80	
15	Psychology		40	
16	Radiology		10	
17	Yoga and Naturotherapy		10	
18	Medicine-II	Neurology	40	70
		Pediatrics	30	
19	Obstetrics & Gynecology		40	
20	Surgery	General Surgery, Cardiothoracic Surgery & Neuro Surgery	50	60
		ENT	10	
21	Community Medicine		70	
22	Electro Therapy		250	
23	Physical and Functional Diagnosis		120	
24	P Dermatology		20	50
25	Psychiatry		30	
26	Ophthalmology		5	
27	Acupuncture and Magneto therapy		10	
28	Physiotherapy in Neuro-Muscular Condition		550	
29	Physiotherapy in Musculo-Skeletal Conditions			
30	Physiotherapy in Cardio-Pulmonary & General Medical- Surgical Conditions			
31	Physiotherapy in community health		60	
32	Bio-engineering		40	
33	Bio-Statistics & Research Methodology		50	
34	Introduction to evidence based practice in Physiotherapy		10	
35	Management and Ethics		20	
36	Clinical hours during 1st,2nd,3rd and Final year		2200	
37	Institutional Visits, Conferences, Educational tours and others		500	
	Total		**5860**	

ANNEXURE-3

Syllabus for the subjects of FY BPT
Scheme and structure for theory examination
Scheme and structure for practical exam for Physiotherapy subjects

1.HUMAN ANATOMY

OBJECTIVES:-

At the end of the year the student will be able to

1. understand the organization of the human body
2. understand the topographical and functional anatomy of the brain, thorax, abdomen, pelvis and limbs
3. identify and describe anatomical aspects of muscles, bones and joints of the various regions
4. understand the application of anatomy in practice of physiotherapy.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

General introduction ***

1. Definitions and subdivisions
2. Plan of the human body
3. System of the body
4. The unit of structure and function - the cell

Osteology ***

1. Terminology: Anatomical position, axes-planes, surface relationship of parts of the body - proximal, distal etc.
2. Bones: Type of bones, formation, function, growth and repair, structure of long bones, vertebral column, types of vertebrae, bones of extremities and bony landmarks

Arthrology ***

1. Classification of joints
2. Construction of joints

3. Motions of joints
4. Articulations: articular surfaces, types of joints, motions of upper and lower extremities, trunk, head

Myology ***

1. Types of muscle tissue
2. Muscles of upper extremity, lower extremity, trunk, eye, face etc.
3. Origin, insertion, nerve supply and action of muscle

Cardiovascular System ***

1. Blood, lymph, tissue fluid: characteristics, composition, function
2. The heart: main arteries, veins, capillaries
3. Lymph circulation

Nervous System ***

1. Division and function of the nervous system
2. Nerve tissue: neuron, nerve fiber, synapse, end-organs etc.
3. Spinal cord, Brain: their structures, divisions
4. Peripheral and cranial nerves and their distribution, special emphasis on nerve supply to voluntary muscles, segmental distribution
5. Cerebrospinal fluid
6. Sensory end organs and sensation
7. Autonomic nervous system: sympathetic, parasympathetic

Respiratory system ***

1. Anatomy of respiratory organs: air passages, lungs, bronchial tree etc. Relation with diaphragm and thoracic cage
2. Respiratory movements

Digestive System **

1. Anatomy of digestive organs: oesophagus, stomach, intestine, rectum etc.
2. The associated glands of digestive system

rinary System **

1. Anatomy of urinary organs: kidneys, ureter, urinary bladder etc.
2. Emphasis on types of bladder in paraplegics

Endocrine System **

1. Glands, sites, secretion, enzymes, hormones

2.**Reproductive System ****

1. Outline of reproductive system: male and female reproductive organs
2. Family planning

Special sensory organs and sensations **

1. Emphasis on skin, ear and eyes, less detail on smell and taste

Histology *

1. Cell, tissues of the body, epithelium, connective tissue, cartilage, bone, blood vessels, lymphatic tissue, muscles and nerves

General Embryology **

1. Ovum, spermatozoa, fertilization and information of the germ layers and their derivations
2. Development of skin, fascia, blood
3. Neural tube, brain vessels and spinal cord
4. Development of brain and brain stem structures, developmental anomalies

PRACTICAL WORK ***

Dissection:

1. Dissection of upper and lower extremities, back, anterolateral abdominal wall, thoracic wall

2. Identification and description of all anatomical structures, surface marking, points of palpation of nerves and arteries

<u>Regional Anatomy</u>

Upper Extremity ***

1. Osteology: clavicle, scapula, humerus, radius, ulna, carpals, metacarpals, phalanges in articulated hand

2. Soft parts: breast, axilla, front & back of arm, cubital fossa, front of forearm, back of forearm, palm, dorsum of hand, muscles, fascia, nerves, blood vessels and lymphatic drainage of upper extremity

3. Joints: shoulder girdle, shoulder joint, elbow joint, radio-ulnar joint, wrist joint and joints of the hand

4. Arches of hand, skin of the palm and dorsum of hand

Lower extremity ***

1. Osteology: hip bone, femur, tibia, fibula, patella, tarsals, metatarsals and phalanges in articulated foot

2. Soft parts: gluteal region, front and back of the thigh (femoral triangle, femoral canal and inguinal canal), medial side of the thigh (adductor canal), leg, sole of the foot, arterial supply of the lower limb, venous drainage of the lower limb, lymphatic drainage of lower limb, nerves of the lower limb, arches of foot, skin of foot

3. Joints: hip joint, knee joint, ankle joint, joints of the foot

Trunk **

1. Osteology: cervical, thoracic, lumbar, sacral and coccygeal vertebrae and ribs

2. Soft parts: pre and para vertebral muscles, intercostal muscles, anterior abdominal wall muscles, intervertebral disc, thoracic and abdominal viscera

Head and neck **

1. Osteology: mandible and bones of the skull

2. Soft parts: muscles of the face and neck and their nerve and blood supply, extra-ocular muscles, salient points about the eye ball and internal ear and viscera

Neuro-anatomy ***

1. Organization of central nervous system: spinal nerves and autonomic nervous system mainly pertaining to cardiovascular, respiratory and urogenital systems
2. Cranial nerves
3. Peripheral nervous system: peripheral nerves, sensory end organs, neuro-muscular junction and spinal segments and areas
4. Central nervous system: spinal cord, brainstem, cerebellum, thalamus, hypothalamus, corpus striatum, cerebral hemisphere – white and gray matter, lateral ventricles, blood supply of brain, meninges, the pyramidal system and extrapyramidal systems, anatomic integration

Surface Anatomy ***

1. Bony land marks of body especially of extremities
2. Arteries and nerves of extremities
3. Lung, pleura, fissures and lobes of the lung, heart, liver, spleen and kidney
4. Cranial nerves
5. Demonstration of movements of important joints

NOTE - Histology should not be included in practical exam

RECOMMENDED BOOKS:-

1. Human Anatomy - B.D. Chaurasia (all 3 volumes)
2. General Anatomy - B.D. Chaurasia
3. Clinical Anatomy - Kulkarni
4. General Anatomy - Dutta
5. Cunningham's manual of practical Anatomy

REFERENCE BOOKS:-

1. Human Anatomy - Snell
2. Anatomy and Physiology - Smout and Mcdowell
3. Neuro Anatomy - Inderbir singh

Scheme and the Structure of Examination

		External	+	Internal		Total
Theory	-	80	+	20	=	100
Practical	-	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1. MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

NOTE – all questions from UPPER LIMB

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

NOTE – 3 questions - brain, 2 questions - head & neck

Section – III (30 marks)

Q-4 LAQ***** (must be from **must to know** area)

Full question 15 marks

OR

Full question

NOTE – all questions from LOWER LIMB

Q-5 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

NOTE – 2 questions - thorax, 1 question - abdomen, 1 question - general anatomy, 1 question - histology (or) embryology

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead, SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

2. HUMAN PHYSIOLOGY

OBJECTIVES:-

At the end of the course the student will be able to

1. explain the normal functioning of all the organ systems and their interactions for well-coordinated total body functions with special reference to musculo-skeletal, nervous system, cardio-respiratory, female uro-genital system and alteration in functions of organs due to aging

2. assess the relative contribution of each organ system to the maintenance of the milieu interieur [Homeostasis]

3. describe the physiological response and adaptations to environmental stresses with special emphasis on physical exercise and environmental temperature

4. acquire the skill of basic clinical examination, with special emphasis to exercise tolerance/ Ergography.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

GENERAL PHYSIOLOGY **

1. Cell: structure and function

2. General principles of biophysics
3. Homeostasis

BLOOD **

1. Introduction, composition of blood
2. Plasma proteins
3. Red blood cells, anemia, polycythemia
4. White blood cells, leukopenia, and inflammation
5. Innate immunity and acquired immunity
6. Hemostasis and blood coagulation, platelets
7. OAB blood types, Rh blood types, transfusion

CARDIOVASCULAR SYSTEM ***

1. Introduction to cardio-vascular system
2. Heart muscle: the heart as a pump and function of the heart valves
3. Cardiac cycle and heart sounds
4. Rhythmical excitation of the heart, the normal electrocardiogram
5. Cardiac output, venous return and their regulation
6. Heart rate and its regulation
7. Blood pressure and its regulation, hypertension
8. Physiology of shock, hemorrhage
9. Effects of exercise on cardiovascular system

RESPIRATORY SYSTEM ***

1. Mechanics of pulmonary ventilation
2. Lung volumes and capacities.
3. O_2 transport between the lungs and tissues
4. CO_2 transport between the tissues and lungs
5. Regulation of respiration
6. Effects of exercise on respiratory system
7. Hypoxia, asphyxia, dyspnoea, cyanosis
8. Artificial respiration

DIGESTIVE SYSTEM **

1. General principles of gastrointestinal function
2. Composition, function, and nervous regulation of salivary secretion.
3. Physiology of swallowing
4. Composition, functions and regulation of gastric secretion
5. Gastric motility, gastric emptying, regulation of gastric emptying
6. Composition, functions and regulation of pancreatic secretion

7. Composition, functions and control of bile secretion
8. Functions of liver
9. Motility of small intestine
10. Functions of small intestine: secretion, digestion and absorption
11. Functions of large intestine: defecation
12. Digestion, and absorption of carbohydrates, fats and proteins

ENDOCRINE SYSTEM **

1. Anterior pituitary hormones
2. Posterior pituitary hormones
3. Thyroid hormones
4. Hormones of adrenal cortex
5. Hormones of adrenal medulla
6. Parathyroid hormone calcitonin, vitamin D
7. Insulin, glucagon, and diabetes mellitus

REPRODUCTIVE SYSTEM **

1. Physiologic anatomy of the male sexual organs
2. Puberty
3. Spermatogenesis, functions of FSH, LH and Testosterone
4. Menstrual cycle
5. Pregnancy
6. Lactation
7. Male and female contraception

EXCRETORY SYSTEM **

1. Multiple functions of the kidneys in homeostasis
2. Structure and function of Nephron
3. Mechanism of urine formation by the kidneys
4. Renal function tests
5. Physiology of micturition

SPECIAL SENSES **

1. Structure of Eye, functions of rods and cones, photoreceptor mechanism
2. Color vision
3. Errors of refraction
4. Visual pathway, visual cortex
5. Physiology of hearing
6. Vestibular apparatus and its function

7. Sensations of taste and smell

MUSCLE AND NEURO MUSCULAR JUNCTION ***

1. Introduction to muscular system, types of muscles and functions of each type of muscle
2. Structure and properties of skeletal muscle
3. Molecular mechanism of muscle contraction
4. Energetics of muscle contraction
5. Motor unit recruitment and fatigue
6. Applied physiology of skeletal muscle: tone, atrophy, hypertrophy, effect of motor nerve sectioning, effect of exercise
7. Neuromuscular transmission & excitation-contraction coupling, Myasthenia Gravis
8. Electromyography
9. Excitation and contraction of smooth muscle
10. Properties of cardiac muscle
11. Comparison of skeletal, smooth, and cardiac muscles

NERVOUS SYSTEM ***

1. Structure and function of Neurons, Resting Membrane Potential, Action Potential, saltatory conduction
2. Wallerian degeneration and regeneration in peripheral nerves
3. Synapse, properties of synapse, synaptic fatigue
4. Introduction to sensory physiology, sensory receptors
5. General sensations: touch, pain, pressure, proprioception
6. Pain receptors, pain sensations, referred pain
7. Pain control systems of the body
8. Sensory tracts
9. Introduction to motor system, reflex arc, stretch reflex
10. Pyramidal and extra-pyramidal tracts
11. Hemisection and complete section of spinal cord
12. Upper motor neuron paralysis and lower motor neuron paralysis
13. Basal ganglia and their role in control of voluntary movement
14. Cerebellum
15. Hypothalamus, Role of hypothalamus in regulation of body temperature
16. Limbic system
17. Physiology of sleep
18. Physiology of learning and memory
19. Physiology of speech

20. Cerebral cortex and its functions
21. Cerebrospinal fluid
22. Blood brain barrier

PRACTICALS & DEMONSTRATION:

(A) 1. Hemoglobin Estimation
2. Total RBC count
3. Preparation and staining of Blood smears
4. Differential WBC count (DLC)
5. Total WBC count
6. Blood grouping
7. Bleeding & clotting time
8. Erythrocyte Sedimentation rate (ESR)

(B) 1. Artificial Respiration
2. Lung volumes and capacities

(C) 1. Auscultation of Heart sounds
2. Measurement of arterial blood pressure
3. Cardiac efficiency tests
4. Recording and study of Electrocardiogram
5. Radial pulse examination

(D) 1. Cranial nerve examination
2. Sensory system examination
3. Superficial and deep reflexes
4. Motor system examination
5. Ergography

(E) Varieties of stimuli, electrical apparatus for physiological experiment. Frogs Nerve muscle preparation and demonstration of the following experiments on it.

1. Simple muscle twitch.
2. Effect of load & temperature, genesis of tetanus and fatigue on muscular contractions.
3. Frog's normal cardiogram.
4. Effect of following on normal cardiogram of frog:
   - Temperature
   - Extrasystole
   - Stimulation of vagosympathetic trunk

RECOMMENDED BOOKS:-

1. Human physiology - Chatterjee
2. Text book of Medical Physiology - Guyton & Hall
3. Concise Medical Physiology - Chaudhari
4. Essentials of Medical Physiology - Sembulingam

REFERENCE BOOKS:-

1. Review of Medical Physiology - William F Ganong
2. Principles of Anatomy and Physiology - Gerard J. Tortora

Scheme and the Structure of Examination:

	External	+	Internal		Total
Theory -	80	+	20	=	100
Practical -	80	+	20	=	100

<u>THEORY EXAM</u>

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question

OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

3.BIO-CHEMISTRY

OBJECTIVES:-

At the end of the course, the student will be able to

1. describe the structure and function of the cell in brief
2. describe the normal functions of different components of food
3. describe Basal Metabolic Rate and the factors affecting the same (in brief) with special reference to obesity
4. discuss nutritional aspects of carbohydrates, lipids, proteins, vitamins, minerals and their metabolism with special reference to obesity
5. define enzymes and discuss in brief the factors affecting enzyme activity and diagnostic use of enzymes
6. describe in detail the biochemical aspects of muscle contraction
7. acquire knowledge in brief about the clinical biochemistry, with special reference to liver and renal function test, blood study for lipid profile, metabolism of fat, carbohydrate, proteins, bone minerals, electrolyte balance, water balance and acid-base balance.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Cell biology ***

1. Membrane structure and function
2. Functions of intracellular organs in brief

Carbohydrates

1. Chemistry, definition, classification with examples ***
2. Functions of mucopolysaccharides ***
3. Reducing properties of sugars of clinical and diagnostic importance (e.g.Benedict's test, Barfoed"s test etc.) ***
4. Metabolism, digestion and absorption of carbohydrates, glycolysis-aerobic and anaerobic, energetics and regulation ***
5. Kreb's cycle, its energetics regulation and role of TCA cycle **
6. Glycogenesis, Glycogenolysis, their regulation and the role of liver and muscle glycogen ***
7. Significance of HMP shunt and gluconeogenesis **
8. Hormonal regulation of blood sugar level, important metabolic disorders of glycogen **
9. lactose intolerance, diabetes mellitus, GTT, Glycosuria ***

Proteins

1. Chemistry, definition, classification of amino acids, protein structure, effect of temperature on proteins, denaturation, coagulation, isoelectric pH and its importance ***
2. Metabolism, digestion, and absorption, decarboxylation, deamination, transmethylation, transamination and their importance and detoxification of ammonia including urea cycle ***
3. Special products of amino acids, e.g. phenylalanine, glycine, methionine **
4. Neurotransmitters ***
5. Plasma proteins including immunoglobulins ***
6. Hemoglobin, myoglobin – functions, heamoglobinopathies, Thalassemia ***
7. Structural proteins: collagen, elastin ***

Lipids

1. Chemistry, definition, classification and function ***
2. Metabolism, digestion and absorption of lipids, betaoxidation of fatty acids and its energetics, regulation of fat metabolism in adipose tissue, ketone bodies formation and its utilization, cholesterol and importance of lipoproteins, lipoprotienemia with atherosclerosis-causes and prevention, fatty acid synthesis, fatty liver and obesity ***

Nucleic acids, nucleosides and nucleotides

1. DNA, RNA: definition, structure and functions, types, genetic codes **
2. catabolism of purines – gout ***

Enzymes

1. Definitions, coenzymes, classification, factors affecting ***

2. Inhibition and types of inhibitors ***
3. Isoenzymes **
4. Clinical and therapeutic uses of enzymes ***

Vitamins

1. Definition, classification, functions, deficiency symptoms, RDA ***

Biological oxidation

1. Oxidative phosphorylation and ETC **

Minerals

1. Phosphate, Calcium and Iron ***
2. Magnesium, Fluoride, Zinc, Copper, Selenium, Molybdenum, Iodine: sources, RDA, absorption, transport, excretion, function and disorders **
3. Acid-base balance, water and electrolyte balance ***

Connective tissue

1. Biochemistry of connective tissue-collagen, glycoprotein, proteoglycans ***

Nutrition and BMR, PEM, balanced diet ***

Clinical Biochemistry ***

1. Liver function test and renal function test
2. Relevance of blood levels of glucose, urea, calcium, phosphate and uric acid
3. Enzymes: Amylase, CPK, LDH, Isoenzymes
4. Lipid profile: Triglyceride, Cholesterol, HDL, LDL, VLDL etc
5. Glycosuria

RECOMMENDED BOOKS:-

1. Textbook of Biochemistry for medical students - D M Vasudevan
2. Biochemistry - Dr. Satyanarayan
3. Textbook of Biochemistry - Dr. Dinesh Puri
4. Biochemistry made easy - Dr. Haridas

REFERENCE BOOKS:-

1. Review of biochemistry - Harper (24th Ed.)
2. Biochemistry - Lippincott

Scheme and the Structure of Examination:

	External	+	Internal		Total
Theory -	40	+	10	=	100

THEORY EXAM

Section – I (10 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

4. SOCIOLOGY

OBJECTIVES:-

At the end of the course the candidate will be able to

1. define the term sociology and its importance in the health delivery system
2. understand the basic sociological concepts, principles and social process, social institution in relation to the individual family and community and the various social factors affecting the family in rural and urban communities in India.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Introduction ***

1. Meaning, definition and scope of sociology
2. Its relation with anthropology, psychology, social psychology and ethics **
3. Methods of sociology: case study, social survey, questionnaire, interview and opinion poll methods **
4. Importance of its study with special reference to health care professionals

Social factors in Health and disease ***

1. The meaning and nature of socialization
2. The role of social factors in health and illness

Socialization ***

1. Meaning and nature of socialization
2. Primary, secondary and anticipatory socialization
3. Agencies of socialization

Social Groups ***

1. Concepts of social groups, influence of formal and informal groups on health and sickness
2. The role of primary groups and secondary groups in the hospital and rehabilitation setting

Family ***

1. The family
2. Meaning and definition
3. Function
4. Types
5. Changing family patterns
6. Influence of family on individuals health, family and nutrition, effects of sickness on family and psychosomatic disease and their importance to physiotherapy

Community ***

1. Rural community: meaning and feature, health hazards of ruralites
2. Urban community: meaning and features, health hazards of urbanites

Cultural and Health ***

1. Concept of culture
2. Culture and behavior
3. Cultural meaning of sickness
4. Cultural and health disorder

Social change ***

1. Meaning of social changes
2. Factors of social change
3. Human adaptation and social change
4. Social change and stress
5. Social change and deviance
6. Social change and health programme
7. The role of social planning in the improvement of health and rehabilitation

Social Problems of Disabled ***

- Consequences of the following social problems in relation to sickness and disability, remedies to prevent these problems:

1. Population explosion
2. Poverty and unemployment
3. Beggary
4. Juvenile delinquency
5. Prostitution
6. Alcoholism
7. Problems of women in employment

Social Security ***

1. Social security and social legislation in relation to disabled

Social worker **

1. Meaning of social work. The role of a medical social worker

RECOMMENDED BOOKS:-

1. Introduction to the study of Sociology - Sachdeva and Vidyabushan,
2. Textbook of Sociology for graduates nurses and physiotherapy students -INDRANI T.K.
3. Social Problems in India - Ram Ahuja

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	40	+	10	=	50

THEORY EXAM

Section – I (10 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

5. BIO-MEDICAL PHYSICS & COMPUTER APPLICATIONS

OBJECTIVES:-

At the end of the course the candidate will able to

1. describe the fundamentals of general physics and able to relate its application in physiotherapy
2. understand basic physical principles of mechanics, sound, light and heat with their application in physiotherapy field
3. understand basic aspects of electricity and electronics as related to its application in electrotherapy instruments
4. describe in brief, certain common electrical components such as capacitors, transformers, valves & transistors and will be able to identify such components
5. understand the fundamentals of computer and its application.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

BIO-MEDICAL PHYSICS

General Physics ***

1. Force: definition, unit, resolution of forces, Newton's laws of motion, types of motion
2. Force of gravity, center of gravity, reaction forces
3. Equilibrium, determination of equilibrium of a body
4. Work, power, energy, torque
5. Friction: coefficient of friction, static and dynamic friction, limit of friction, friction a necessity and evil
6. Elasticity, modulus of elasticity, elastic properties of materials
7. Simple machine: mechanical advantage, velocity ratio, efficiency, pulley, lever, wheel and axle, spring, properties of spring
8. Fluid mechanic: viscosity, definition, coefficient of viscosity, streamline and turbulent flow, effect of temperature and pressure on viscosity, principle of Archimedes, laws of floatation, hydrostatic pressure, buoyancy, surface tension, excess pressure in spherical liquefied drop, physical property of water, Bernoulli's theorem

Thermodynamics ***

1. Heat transfer, properties of thermal radiation, absorptive power, emissive power, Kirchhoff's Law of radiation, perfectly black body, black body radiation
2. Specific heat, thermal capacity, water equivalent, Newton's laws of cooling, determination of specific heat of a liquefied by cooling, specific heat of gases, joules law of heat production
3. Energy conservation, I and II law of thermodynamics, Grothus' law
4. Physical effects of heat: expansion, evaporation, thermionic emission etc. concept of heat and temperature, measurement of heat, thermometry, thermometer, method of measuring body temperature, human body temperature, biophysics of superficial heat and cold

Sound ***

1. Origin of sound, definition, characteristics, properties of sound, relation between frequency and wavelength
2. Newton's formula for velocity of sound, Laplace's correction, effect of pressure, temperature, density of medium, humidity, wind
3. Velocity of sound in water, interference of sound waves, resonance
4. Velocity of sound in air by resonance method, Doppler effect, Echo
5. Infrasonic and Ultrasonic waves: Production, characteristics and application of ultrasonic wave

Light ***

1. Electromagnetic spectrum: solar spectrum, emission and absorption spectra, infrared spectrum, ultraviolet spectrum
2. Laws of transmission, reflection, refraction, absorption, interference of light
3. LASER: lasing theory, types of LASER, production and application of LASER
4. Fiber optics and its characteristics

Electricity ***

1. Fundamentals of electricity, conductors and insulators, static electricity. Different types of capacitors, biological cell as a capacitor
2. Laws of electricity: Ohm's law, potential divider theorem and its applications.
3. Effects of electric current: thermal (Joule's law), chemical (Electrolysis-Faraday's Law) and magnetic effect
4. Electromagnetic induction: Lenz's law, Faraday's law, Fleming's right hand rule, self induction, mutual induction, induction coil, induction of EMF in a coil rotating within the magnetic field, Eddy currents
5. Transformer: step-up, step-down, auto-transformers
6. Production of electricity, mains supply, measurement of AC/DC voltage and current

Electronics ***

1. Thermionic valves, semiconductor devices, diode characteristics, types (zener, photodiode, LED, varactor) and uses of semiconductor diodes, advantages of semiconductor over thermionic valves, rectifier, types and comparison of rectifiers, transistors and its characteristics, fixed bias circuit, transistor amplifier, oscillator, basics of integrated circuits

2. Production of high frequency current by klystron, magnetron, electronic circuit, oscillating circuit

3. Production of shaped pulses, modification of electric pulses, amplification of electrical pulses, Cathode ray oscilloscope.

Physical aspects of therapeutic modalities ***

1. Production, characteristics and applications of X-rays, uses of Infrared radiation, uses of Ultraviolet radiation, Short wave diathermy, Microwave diathermy, Electric shock: causes & prevention.

2. Application of Ultrasonic waves, types of electrodes for electro-diagnostic and therapeutic application.

3. Therapeutic currents: impulses - definition & types, pulse duration & pulse depletion time, Galvanic currents, Faradic currents, surging current, exponentially progressive current, biphasic stimulation.

PRACTICALS:

1. Use of multimeter to study electronics components
2. Use of CRO and its application
3. Study of ultrasonic waves
4. Characteristics of LASER
5. Study of elasticity of material
6. Different types of pulley
7. Combinations of springs
8. Transmission of signals, fiber optic etc.
9. Study of different signals
10. Laws of EM radiations
11. Combination of forces
12. Study of diodes (FB, RB, Zener)
13. Transistor characteristics

14. Transistor amplifier
15. Constant volume air thermometer
16. Stefan's law of radiation
17. Newton's law of cooling

COMPUTER APPLICATIONS **

Basic Anatomy of computers

Hardware Concepts

1. Architecture of computers, classification of computers, concept of damage
2. Types of storage devices. Characteristics of disks, tapes, terminals, printers and network. Applications of networking, concept of PC system care, floppy care, data care

Concept of software

1. Classification of software: system software, application of software, operating system, computer system, computer virus, precautions against viruses, dealing with viruses. Computers in medical electronics

Introduction to data processing

1. Features of computers, advantages of using computers, getting data into/ out of computers, role of computers
2. Data processing: application areas of computers involved in data processing, common activities in processing, types of data processing, characteristics of information

Principles of programming

Computers application *

Principles in scientific research, work processing, medicine, libraries, museum, education, information system

Computers in physical therapy

Principles in EMG, exercise testing equipment, LASER and computer simulation in biomechanics

RECOMMENDED BOOKS:-

1. Physics for engineers and scientists - Helidey & Resnik
2. Physical principles explained - Low & Reed
3. Fundamentals of Bio-medical Physics - Babita Saiyed & Akil Saiyed

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100
Practical	-	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in

which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

6. EXERCISE THERAPY & BIOMECHANICS-I (Inclusive of MASSAGE MANIPULATION)

OBJECTIVES:-

At the end of the year the student will be able to

1. understand the basic mechanical principles and effect of exercise therapeutic modality in the restoration of physical function
2. describe and also acquire the skills of application and demonstration of the use of various tools used for the therapeutic exercise
3. describe and also acquire the skills of application and demonstration of various starting and derived positions
4. describe the physiological and therapeutic effects of various movements and demonstrate in various anatomical planes
5. demonstrate and acquire the skill of relaxation technique
6. acquire the skills of application of various massage manipulation and describe the physiological effects, therapeutic uses, merits & demerits of the same
7. understand the basic bio-mechanical principles in Physiotherapy.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

EXERCISE THERAPY

1. Introduction to exercise therapy ***
2. Physiological effects and uses of exercise ***
3. Uses of apparatus in exercise therapy ***
4. Springs: properties of springs, springs in series and parallel ***

Range of motion ***

1. Causes of restriction of range of motion, normal and abnormal end feels

2. Goniometry: types, principles and method for measuring each (ROM)
- Maintenance of record of ROM

Fundamental starting positions, derived positions ***

1. Muscle work for all positions
2. Effects and uses

Classification of movements ***

1. Passive movement – definition, types, effects and uses
   Technique of relaxed passive movement
2. Active – definition, types, techniques, effects and uses
3. Comparison of Active & Passive movement
4. Active assisted movement – definition, types, techniques, effects and uses
5. Resisted exercise – definition, types, techniques of application of resistance, effects and uses
- PRE - Progressive Resisted Exercise techniques (Oxford method, Delorme method, Macqueen's method)
- Maintenance of record of PRE

Suspension therapy ***

1. Definition, principles, equipments & accessories, indications & contraindications
2. Benefits of suspension therapy
3. Types of suspension therapy: axial, vertical
4. Techniques of suspension therapy for upper limb
5. Techniques of suspension therapy for lower limb

Group work ***

Definition, criteria of selection of patients, advantages and disadvantages of group/class exercises

Home exercises ***

Definition, advantages and disadvantages of home exercises

Relaxation ***

Definition, types, principles, indications, techniques

Hydrotherapy **

1. Definitions, goals and indications, precautions and contraindications,
2. Properties of water, use of special equipments, techniques, effects and uses, merits and demerits

Neuromuscular co-ordination ***

1. Definition and mechanism of co-ordination, Inco-ordination, causes for inco-ordination, Principles of re-education of co-ordination
2. Frenkel's Exercise: uses, technique, progression

Assessment ***

Sensation, reflex testing, blood pressure, pulse rate, chest expansion and respiratory rate

MASSAGE MANIPULATION ***

1. Introduction- brief history, definition, classification
2. Physiological effects and therapeutic uses, contra-indications
3. Preparation of patient, basic points to be considered before and during massage procedure
4. Technique, effects and uses of each massage manipulation, contra indications
5. Massage for upper limb, lower limb, neck and back, face
6. Massage for edema, relaxation, spasm, scar, fibrosis (tight fascia), tendinitis, removal of lung secretions

BIO-MECHANICS ***

Description of motion (Kinematics)

Types of motion, laws of motion, location of motion, direction of motion, magnitude of motion

Analysis of force (Kinetic)

Definition of force, magnitude of force, point of application, direction of force, Components of force, composite effects of two or more forces, torque, Force of friction, force of inertia, force of gravity, equilibrium

WORK

1. Lever: definition, orders of lever, anatomical lever, levers in Physiotherapy
2. Anatomical pulley, anatomical wheel & axis

Principles of stability

Base of support, height, mass of body, the impact of forces (e.g.Gravity), segmentation, visual factors, psychological factors, physiological factors

Mechanism of joint motion

Types of joints, structure of joints, joint function and motion

Mechanics of muscle action

Classification of muscle, functional characteristics of muscle, length-tension relationship, types of muscle contractions, group action of muscles, angle of pull, action of two joint muscle

PRACTICALS: ***

Skill to be practiced on peer/model

RECOMMENDED BOOKS:-

1. Principles of exercises therapy – Dena Gardiner
2. Massage for Therapist - Margaret Hollis
3. Practical exercises therapy - Margaret Hollis & Cook
4. Guideline for Goniometry - Cynthia Norkin & Joyce white
5. Clinical kinesiology - Brunnstrome
6. Joint structure and function - Cynthia Norkin

REFERENCE BOOKS:-

1. Therapeutic Exercise foundation and techniques- Kisner
2. Clinical Kinesiology and Anatomy - Lippert

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100
Practical	-	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

Practical Exam

1. Massage (Compulsory) 15 marks

2. Goniometry/ Suspension 20 marks
(any one)

3. Any one of the following 10 marks
(Different types of movements,

Relaxation, group exercise, home exercise, fundamental position, derived position, axes/planes, pelvic tilt, muscle work, effects of exercise therapy, Frenkel's exs general principles of biomechanics)

4. Spots (10 spots – 2 marks each) 20 marks
   (2 minutes per spot)
   (based on therapeutic gymnasium)

5. Viva Voce 10 marks

6. Journal (Minimum of 12 topics) 05 marks

7. INTRODUCTION TO PHYSIOTHERAPY

OBJECTIVES:-

At the end of the course the candidate will able to

1. understand patterns of Health Care delivery in India
2. know history of Physiotherapy and role of Physiotherapy in health care system in India

SYLLABUS:-

Patterns of Health Care Delivery

1. National Trends and resources
2. Local trends and resources
3. Overview of Health Science Professions

Components of Physiotherapy Profession

1. History of Medical Therapeutics
2. History of Physiotherapy
3. Why to select physiotherapy

Role of Physiotherapy in meeting Health Care needs in India

1. Needs versus Demands

2. Physiotherapist as Educator
3. Typical Job settings
4. Common problems and solutions

8. FIRST AID & NURSING WITH EMPHASIS ON CPR

OBJECTIVES:-

At the end of the course the candidate will be able to

1. Know the role and importance of Nursing in patient care
2. know basic handling of patient in Positioning, lifting and transporting from wheelchair and stretchers, feeding and self hygiene
3. do simple dressings and first aid in emergencies.

SYLLABUS:-

Introduction

What is nursing? Nursing principles, inter-personal relationships, bandaging, basic turns, bandaging extremities, triangular bandages and their application

Nursing position

Environment safety, Bed making, prone, lateral, dorsal, dorsal re-cumbent, Fowler's positions, comfort measures, aids and rest and sleep

Lifting and transporting patients

Lifting patients up in the bed, transferring from bed to wheel chair, transferring from bed to stretcher

Bed side management

Giving and taking bed pan, urinal, observation of stools, urine, observation of sputum, understand use and care of catheters, enema giving

Methods of giving nourishment

Feeding, tube feeding, drips, transfusion

Care of rubber goods

Observation, reporting and recording temperature, respiration and pulse, simple aseptic techniques, sterilization and disinfection

Surgical dressing

Observation of dressing procedures

First aid

Syllabus as for certificate of Red cross society of St. John's Ambulance Brigade.

Pain management in context to nursing

CPR

1. Indications of CPR.
2. Assessment and technique of CPR.
3. Artificial ventilation.
4. Basic life support & ACLS in brief

RECOMMENDED BOOKS:-

1. Stephanie's Principles & practice – Vol. I & II (6^{th} Ed.)
2. PV - textbook of personal hygiene & First Aid - 2012

9. ENGLISH

OBJECTIVES:-

At the end of the course the candidate will be able to

1. read and comprehend English language
2. speak and write grammatically correct English
3. appreciate the value of English language in personal and professional life.

SYLLABUS:-

Introduction

Study techniques, Organization of effective not taking and logical processes of analysis and synthesis, the use of the dictionary, Enlargement of vocabulary, effective diction

Applied Grammar

Correct usage, the structure of sentences, the structure of paragraphs, enlargements of vocabulary.

Written Composition

Precise writing and summarizing, writing of bibliography, Enlargement of vocabulary

Reading and Comprehension

Review of selected materials and express oneself in one's words. Enlargement of vocabulary.

The study of the various forms of composition

Paragraph, Essay, Letter, Summary, Practice in writing

Verbal Communication

Discussions and summarization, Debates, Oral reports, Use in teaching

ANNEXURE-4

Syllabus for the subjects of SY BPT
Scheme and structure for theory examination
Scheme and structure for practical exam for Physiotherapy subjects

1.PATHOLOGY & MICROBIOLOGY

PATHOLOGY

OBJECTIVES:-

At the end of the course, the student will be able to

1. acquire the knowledge of concepts of cell injury and changes produced thereby in different tissues and organs; capacity of the body in healing process

2. recall the etio-pathogenesis, the pathological effects and the clinico-pathological correlation of common infection and non infectious disease

3. acquire the knowledge of concepts of neoplasia with reference to the etiology, gross and microscopic features, diagnosis and prognosis in different tissues and organs of the body

4. correlate normal and altered morphology of different organ systems in different diseases needed for understanding disease process and their clinical significance (with special emphasis to Neuro-Musculoskeletal and Cardio Vascular - Respiratory systems)

5. acquire knowledge of common immunological disorders and their resultant effects on the human body

6. understand in brief, about the hematological diseases and investigations necessary to diagnose them and determine their prognosis.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

General Pathology ***

1. Importance of pathology in physiotherapy
2. Definition of health, pathological basis of health, disease
3. Inflammation: general aspects, types
4. Tissue repair: wound healing, fracture
5. Cell injury-degeneration: physical and chemical irritants; ionizing radiations – cellulitis
6. Disturbances of circulation: edema, thrombosis, embolism
7. Necrosis, gangrene
8. Growth cellular adaptation: atrophy, hypertrophy, hyperplasia
9. Cellular ageing
10. Tumors: definitions, classification, etiology and spread
11. Infection: acute/chronic, AIDS
12. Blood: anaemia, definition, classification, etiology, laboratory investigations- blood picture, hemorrhagic disorders(causes and classification)
13. Auto immune disorders: RA, SLE

Systemic pathology (each condition in this section is to be taught under the specific headings of causes, gross and microscopic picture only)

Respiratory systems ***

Bronchitis, bronchial asthma, emphysema, pneumonia, Ca of lung

Cardiovascular system ***

Rheumatic heart disease, myocardial infarction, atherosclerosis, congenital heart diseases

Alimentary system ***

TB intestine, peptic ulcer

Liver ***

Hepatitis, cirrhosis

Central nervous system ***

Meningitis, encephalitis, cerebral hemorrhage, CNS tumor *

Peripheral nerves ***

Neuritis, neuralgia, GB syndrome, neuropathies

Bones-joints ***
Osteomyelitis, osteoarthritis, septic arthritis, gout arthritis, osteomalacia
Bone tumors * - giant cell tumor, osteosarcoma, Ewing's

Muscle & neuro-muscular disorders ***
Muscle disorders including poliomyelitis, myopathies and myasthenia gravis

Skin ***

Scleroderma, psoriasis

Urinary system **

Nephritis, glomerulonephritis, nephrotic syndrome

Endocrine system ***

Thyroid: thyroiditis, thyroid tumors, diabetes

RECOMMENDED BOOKS:-

1. Textbook of pathology – Harsh Mohan
2. General Pathology - Bhende
3. General Pathology review - Dr. M L Gupta (2nd Ed.)
4. Textbook of Pathology - Dr. Dutta

REFERENCE BOOKS:-

1. Pathologic basis of disease - Cortran, Kumar, Robbins
2. General and systemic pathology - JCE, Underwood
3. Pathology - Boyd
4. Pathology – Anderson

MICROBIOLOGY

OBJECTIVES:-

At the end of the course, the student will be able to

1. have sound knowledge of the agents responsible for causing human infections, pertaining to CNS, CVS, Musculo-skeletal and Respiratory system.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

General Bacteriology ***

1. Introduction, historical background
2. Basics of morphology and physiology of bacteria
3. Staining of bacteria
4. Sterilization and disinfection
5. Cultivation and culture media

Systemic Bacteriology ***

1. Gram positive cocci: Staphylococci, Streptococci and Pneumococci
2. Gram negative cocci: Gonococci and Meningococci
3. Gram negative bacilli: Typhoid, Cholera, Dysentery
4. Gram positive bacilli
   - Aerobic: Diphtheria, Tuberculosis, Leprosy, Syphilis
   - Anaerobic: Tetanus, Gas gangrene, Botulism

General Virology ***

1. Poliomyelitis
2. Rabies
3. Introduction to Blood born Viral infections
4. Demonstration of tests: Diagnosis of AIDS, hepatitis B & C

Immunology **

1. Immunity
2. Antigen and Antibodies
3. Agglutination, Precipitation
4. Basic of hypersensitivity reactions

Parasitology *

Introduction to important parasitic infections
Malaria, Amoebiasis, Round worm and hook worm

Mycology *

Introduction to important fungal infections
Candidiasis, Ring worm, Scabies

Applied Microbiology *

With respect to systemic, Parasitology, Mycology, Immunology, hypersensitivity tests

1. Infection of bones / joints
2. Infection of burns case
3. Serological test – interpretation of ASO, RA, VDRL, CRP, Widal, ELISA (HIV, HB sag)
4. Demonstration gross / microscopic appearance of various parasites

Aseptic universal precautions & practices **

Biomedical waste and universal precautions

PRACTICALS: (Demonstration only)

Staining, Microscopy, Sterilization, Media, Stool sample, Serology tests

RECOMMENDED BOOKS:-

1. Microbiology for Physiotherapy students – B.S.Nagoba

REFERENCE BOOKS:-

1. Textbook of Microbiology – R. Ananthnarayan & CK Jayram Panikar
2. Textbook of Microbiology – Chakraborthy
3. Textbook of Microbiology – Dr. Arora

Scheme and the Structure of Examination:

		External		Internal		Total
Pathology	-	40	+	10	=	50
Microbiology	-	40	+	10	=	50

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks) PATHOLOGY

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

Section – III (30 marks) MICROBIOLOGY

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

2. PHARMACOLOGY

OBJECTIVES:-

At the end of the course the candidate will be able to

1. describe pharmacological effects of commonly used drugs by patients referred for physiotherapy; list their indications adverse reactions, precautions to be taken and contra indications, formulation and routes of administration

2. identify whether the pharmacological effect of the drug interferes with the therapeutic response of physiotherapy and vice-versa

3. indicate the use of analgesics and anti-inflammatory agents with special reference to movement disorders focusing on consideration of cost, efficacy and safety for individual needs

4. get the awareness of other essential and commonly used drugs by patients, and the bases for their use and common as well as serious adverse reaction.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

General Principles

1. Introduction and scope of pharmacology (definitions), sources of drugs ***
2. Routes of drug administration ***
3. Pharmacokinetics: drug absorption and bioavailability, drug distribution, drug metabolism, drug excretion, biological half like (t½) and steady state concentration etc. ***
4. Pharmacodynamics: site of drug action, mechanism/s of drug action including receptor concept ***
5. Adverse drug reactions and drug interactions – pharmaco vigilance **
6. Factors influencing drug actions, dosage etc **
7. Concepts of essential drugs and rational drug therapy **

Drug acting on peripheral nervous system (autonomic nervous system)

1. Adrenergic agonists and antagonists ***
2. Cholinergic agonists and antagonists ***
3. Skeletal muscle relaxants ***

Autacoids and related drugs

1. Histamine and antihistaminic drugs ***
2. 5-HT and antagonists, ACE inhibitors and angiotensin, antagonists ***
3. Prostaglandins, Nonsteroidal anti-inflammatory drugs (NSAIDs)

Drug therapy of Rheumatoid arthritis, Gout, Osteoarthritis etc.***

Drugs for respiratory disorders

1. Drug therapy of cough *
2. Drug therapy of common respiratory infections: pharyngitis, tonsillitis, sinusitis, laryngitis etc. **
3. Drug therapy of bronchial asthma, COPDs – effect of long term administration of such drugs ***

Drugs for cardiovascular diseases

1. Drugs used in management of hypertension ***
2. Angina pectoris, congestive heart failure, cardiac arrhythmias, shock etc. **
3. Diuretics **

Drugs used in central nervous system (CNS) disorders

1. Introduction to CNS pharmacology ***
2. Alcohol *
3. Sedatives and hypnotics, antianxiety drugs *
4. Antiepleptic drugs ***
5. Opioid analgesics ***
6. Antidepressants, antipsychotics *
7. General and local anaesthetic agents *
8. Drug abuse *
9. Drugs used in treatment of parkinsonism ***

Insulin and other antidiabetic drugs ***

Drugs affecting calcium metabolism ***

Drugs used in the treatment of osteoporosis

Glucocorticosteroids and anabolic steroids ***

Chemotherapy

1. General principles and classification **
2. Antitubercular drugs ***
3. Antileprosy drugs ***

Other chemotherapuetic drugs **

Antibacterial drugs: Sulfonamides, cotrimoxazole, fluoroquinolones, beta lactam antibiotics, aminoglycosides, tetracyclines, chloramphenicol, macrolide antibiotics, misc. antibiotics

Endocrine pharmacology

1. Thyroid and antithyroid drugs ******
2. Female sex hormones *******

Drugs used in gastro intestinal disorders **

Diarrhea, Vomiting, Constipation, Peptic ulcer

Miscellaneous drugs

1. Drugs used in management of anemia *******
2. Immunomodulators, vaccines and sera ******

RECOMMENDED BOOKS:-

1. Pharmacology & Pharmacotherapeutics - RS Satoskar, SD Bhandakar & Nirmala N Rege
2. Essential of Medical Pharmacology – KD Tripathi

REFERENCE BOOKS:-

1. Clinical Pharmacology - D.R. Laurence, PN Bennet, MJ Brown
2. Goodman's & Gilman's the pharmacological basis of therapeutics
3. Basic and clinical Pharmacology- Bertram G Katzung

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	40	+	10	=	50

<u>THEORY EXAM</u>

Section – I (10 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

3. MEDICINE-I

- General medicine

- Cardiorespiratory disorders

- Intensive & emergency Care

OBJECTIVES:-

At the end of the course, the candidate will be able to

1. acquire the knowledge of Etiology, Patho-physiology, signs and symptoms and management in brief, of the infectious diseases, diseases of metabolism especially obesity and other related medical conditions, diseases of hematopoietic system, diseases of GI and urinary tract & endocrine disorders

2. describe etiology, patho-physiology, sign and symptoms, clinical evaluation and management of the various cardio-vascular and respiratory disorders with interpretation of investigations: chest x-ray, Echocardiography, blood gas analysis, blood investigations and pulmonary function test

3. acquire the knowledge of auto-immune & rheumatological conditions with special emphasis to those involving Musculoskeletal system and skin, with regards to

etiology, pathophysiology, signs and symptoms, differential diagnosis and medical management of same

4. describe the principles of management at the medical intensive care unit including theory and practice of first aid /CPR.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

GENERAL MEDICINE

Infectious diseases ***

Infectious diseases including AIDS & sepsis with emphasis on common diseases
Overview of fever & approach to a case with fever

Endocrine diseases ***

Special emphasis to be given to diabetes mellitus, its types and management & disorders of thyroid (thyrotoxicosis & myxoedema)
Calcium and vitamin D metabolism and its disorders, especially osteoporosis

Diseases of nutrition & metabolism ***

Special emphasis to be given to obesity and its related disorders
Brief overview of malnutrition in adult

Disorders of hematopoietic system ***

Clinical manifestations and diagnosis of common anemias especially Iron & B12 deficiency anemias.

Diseases of Digestive & hepato-biliary systems ***

Clinical manifestation, diagnosis and brief management of common disorders of digestive & hepato-biliary systems

Disorders of Renal system ***

Acute kidney injury & chronic kidney diseases

Common rheumatic & auto-immune conditions ***

With special emphasis on Rheumatoid arthritis, SLE, Scleroderma, Primary vasculitis syndromes & Gout

Poly-arthritis nodosa, Spondyloarthropathies (Ankylosing spondylitis) *

Organo-phosphorous poisoning, Snake bite, Alcohol & health hazards of chronic alcoholism **

CARDIO-RESPIRATORY DISORDERS

Approach to the patient with cardio-respiratory disorders: outline of clinical features, investigations, differential diagnosis and principles of management of cardio-respiratory disorders mentioned below.

Cardio-vascular system:

Hypertension ***

Definition, classification, symptoms and signs, complications and treatment

Ischemic heart disease ***

Etiology, pathogenesis, classification, symptoms, investigations including stress test and echocardiography, medical and surgical treatment

Cardiac failure ***

Definition, causes, symptoms and signs and brief management of cardiac failure, overview of cor-pulmonale

Rheumatic fever & valvular heart diseases ***

Etiology, pathogenesis, clinical features, complications and treatment
Overview of Infective endocarditis **
Overview of Shock ***
Overview of pheripheral arterial diseases *

Cardiac muscle disorder*

Cardiomyopathis and myocarditis.

Respiratory system:

Chronic Bronchitis and emphysema ***

Definition, etiopathogenesis, clinical features and treatment

Bronchial asthma ***

Definition, etiology, pathophysiology, clinical features and treatment

Pneumonia ***

Definition, classification, Pathology, epidemiology, complications and treatment

Tuberculosis ***

Etiopathogenesis, clinical manifestations, diagnosis, complicationsand treatment

Lung abscess and bronchiectasis ***

Definition, clinical features, diagnosis and treatment

Pleural disorders***

Pleural effusion, empyema, pneumothorax

Chest wall deformities ***

Describe various deformities of chest wall and its effects on cardio-respiratory system.

Occupational lung diseases ***

Clinical features, diagnosis and treatment

Respiratory failure ***

Classification, causes and treatment, especially ventilatory therapy

Pulmonary embolism ***

Lung function tests ***

Interstitial lung diseases ***

Intensive & Emergency Care

Review of anatomy and physiology related to acute care ***

Airway, breathing, circulation, respiratory centers, cardiovascular system, nervous system and musculoskeletal system related to acute care

First Aid and ABC of Resuscitation ***

Common emergencies (surgical and medical) *******

1. Polytrauma: accidents including fractures, explosions, gunshots

2. Shock syndromes, acute abdomen, hemorrhage, DIC, burns, septicemia with MODS
3. Acute respiratory failure, pulmonary oedema, pulmonary embolism, acute cardiac failure, myocardial infarction, cardiac arrhythmias, coma
4. drug overdose, poisoning, tetanus
5. Acute respiratory paralysis (including poliomyelitis and GB syndrome)
6. Acute renal failure, obstetrical emergencies, pediatrics emergencies

Common anesthetics agents ***

Types, indications, merits-demerits, effects of general anesthesia on cardio-pulmonary function

Special procedures in intensive care ***

Airway care, CVP insertion, bronchoscopy, thoracocentesis, tracheostomy, endotracheal intubation, nasogastric tubes and feeding

Bio-electric instrumentation

ECG and its interpretation, cardiopulmonary monitoring, radiological evaluation, ABG analysis, fluid and electrolyte imbalance, haematological studies. – normal values ***, abnormal values **

Oxygen therapy ***

Methods and delivery, mechanical ventilators and various modes of ventilation

Psychosocial aspect of critical care ***

RECOMMENDED BOOKS:-

1. Davidson's principles and practice of Medicine (19th Ed.)
2. Harrison's Principles of Internal Medicine (16th Ed.)
3. API Textbook of Medicine (7th Ed.)
4. Principles of Critical Care - Farokh Udwadia (3rd Ed.) (for intensive and emergency care)

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

4. ORTHOPAEDICS & TRAUMATOLOGY

OBJECTIVES:-

At the end of the course, the student will be able to

1. discuss the patho-physiology, clinical manifestations and conservative/surgical management of various traumatic and cold cases of the musculo-skeletal conditions

2. traumatic and cold cases both operative and non operative

3. gain the skill of clinical examination and interpretation of the preoperative cold cases and all the post operative cases

4. read and interpret a) salient features of the x-ray of the spine and extremities b) pathological / biochemical studies pertaining to orthopedic conditions

5. correlate the radiological findings with the clinical findings.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

TRAUMATOLOGY

Introduction ***

Fracture, dislocation and injuries of the upper limb. Briefly mention general principles of Orthopedic surgery, definition and scope, brief history

Fracture & dislocations ***

Causes, types, mechanisms, displacement, general symptoms, healing, principles of treatment, complications, malunion, delayed union, non-union, myositis ossificans, Volkman's ischemic contracture, Fat embolism, Sudeck's osteodystrophy

Injuries to the hand ***

Types (open, closed), principles of treatment, injuries to the phalanges, sprains, dislocations of MP & IP joints, fractures of the phalanges, metacarpals, Bennet's fracture, mallet finger, tendon injuries (flexor & extensor)

Wrist & Forearm injuries ***

Wrist dislocation, Colle's fracture, displaced epiphysis, Smith's fracture, Barton's fracture, injuries to carpal, scaphoid and sprains, fractures of forearm bones – greenstick fracture. Infraction injury, both bone fracture, Galleazi, Monteggia fracture dislocation

Injuries to the elbow ***

Traumatic synovitis, sprain, dislocation of elbow joint

Fractures involving elbow joint ***

Supracondylar fracture, intercondylar fracture, fracture medial epicondyle, fracture of lateral condyle, myositis ossificans, Volkman's ischaemic contracture, fracture of the head of the radius, fracture of olecranon

Injuries of shoulder and arm ***

Fractures of the proximal end, neck and shaft of humerus, fractures of clavicle, acromioclavicular and sternoclavicular dislocations, fractures of the scapula

Injuries of the spine ***

Injuries to the cervical spine (Both upper and lower), atlanto-axial injuries

Dorso Lumbar spine: classification, mechanism and types of injuries, stable fracture without paraplegia, fracture dislocation with paraplegia, management of fracture, management of paraplegia, bedsore and bladder care

Injuries of the pelvis **

Fractures, its mechanism, classification, management
Fractures of acetabulum, sacrum and coccyx

Injuries of the lower limb ***

Dislocations of the hip joint, intracapsular and trochantric fractures of femur, fractures of the neck of femur, fracture of the shaft of femur, fracture femur in children

Fracture of femoral condyles, tibial condyles and patella. Injuries to extensor mechanism, contusion, haemarthrosis, knee joint dislocation and traumatic dislocation of patella

Fracture and fracture dislocation of ankle, epiphyseal injury lower end of tibia
Foot- fracture of talus, calcaneum, metatarsals and phalanges

Soft tissue injuries ***

Ligamentous injuries of ankle, knee and injury to Muscles.

Orthopaedic splints and appliances for injuries to muscles and tendons

Tendon transfer ***

Principles, indications, common tendon transfer surgeries

Amputation ***

Types, site, ideal stump, complications, general principles of treatment

Upper extremity and lower extremity amputations – prosthesis and prosthetic service

Principles of operative management, indications and contraindications for arthroplasty, osteotomy, arthrodesis, spinal stabilization, arthroscopy

Limb reattachment *

ORTHOPEDICS

General Orthopedics ***

1. Clinical examination of an orthopedic patient, investigations, radiological and imaging techniques (salient features)
2. Deformities, acquired deformities, causes and principles of management, splinting
3. Traction: procedures, materials
4. Preventive orthopedics
5. Geriatric orthopedics

Congenital disorders

Torticollis , wry neck, kyphosis, lordosis, scoliosis, spina bifida, myelomeningocele , congenital dislocation of hip, congenital genu recurvatum, talipes equino varus ***

Elevation of scapula, madelung's deformity, coxa vara **

Endocranial dystosis, superior radio-ulna dysostosis, sternocleido mastoid tumor *

Infection of bones &joints *

Osteomyelitis (acute and chronic), Brody's abscess as a complication of open fracture
Skeletal tuberculosis, principles of treatment, T.B. of shoulder, elbow and wrist T.B. of hip, knee ankle, and foot

Dactylitis, caries rib

Arthritis ***

Acute pyogenic arthritis, septic arthritis of infancy, small pox arthritis, Syphilic infection of joint, Rheumatoid arthritis, osteoarthritis

Bone tumors **

Classification, true bone tumors- osteosarcoma, giant cell tumor, Ewing's sarcoma, chondroblastoma, chondrosarcoma, fibrosarcoma, lymphoma of bone, plasmacytoma

Bone metastasis: synovial sarcoma, hemangioma of bone, adamanatinoma of long bones and chondroma

Tumor like lesions: osteoid osteoma, benign osteoblastoma, non osteogenic fibroma, osteoma, osteochondroma and enchondroma

Neurological and Muscular disorders

Definition, causes, clinical feature, complications, management (Multidisciplinary approach) medical and surgical of the following conditions: Cerebral palsy, Poliomyelitis, Leprosy ***
Muscular dystrophy – types and treatment **

Injuries to plexus and nerves: Radial, Ulnar, Median, Brachial plexus, Sciatic and Lateral Popliteal ***

Regional conditions of Spine and Lower limb ***

Back: Kyphosis, Scoliosis, Spondylolisthesis, Lumbosacral strain, intervertebral disc prolapse, fibrositis back, Lumbar canal stenosis, sacro iliac strain, spondylosis, spondylolysis

Hip: Slipped capital femoral epiphysis, idiopathic chondrolysis of hip

Knee: Genu valgum, genu varum, tibia varum, genu recurvatum, quadriceps fibrosis, recurrent dislocation of patella, bursa around the knee, loose bodies in the knee, chondromalacia patella

Foot: Painful heel, Plantar fascitis, Posterior heel pain, flat foot, foot strain, pain in forefoot, Hallux valgus, anterior metatarsalgia

Regional conditions of Neck and Upper limb ***

Neck: Cervical spondylosis, intervertebral disc prolapse, Cervical rib, torticollis, Brachialgia

Shoulder: Supraspinatus tendinitis, calcification, rupture of rotator cuff, periarthritis shoulder, deltoid fibrosis, subarachnoid bursitis, Bicepital tendinitis

Elbow: Tennis elbow, Golfers elbow, recurrent slipping of ulnar nerve, cubitus varus and valgus

Wrist and Hand: Ganglion, De quervains disease, trigger finger, trigger thumb, carpal tunnel syndrome and Dupuytren's contracture

Miscellaneous: metabolic disease, rickets, osteomalacia, osteoporosis, parathyroid osteodystrophy, scurvy etc.

RECOMMENDED BOOKS:-

1. Textbook of Orthopedics - Maheshwari
2. Natrajan's Textbook of Orthopedics and Traumatology

3. Outline of Orthopedics - Adam
4. Apley's Orthopedics

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100
Practical	-	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

5. PSYCHOLOGY

OBJECTIVES:-

At the end of the course the candidate will be able to

1. define the term psychology and its importance in the health delivery system and gain knowledge of psychological maturation during human development and growth and alteration during aging process
2. understand the importance of psychological status of the person in health and disease, environmental and emotional influence on the mind and personality
3. acquire the knowledge as to how to deal with the patient.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Introduction to psychology **

Methods in psychology, Fields and Schools of psychology

Biological bases of behavior ***

Hereditary and environment, the nervous system, Neurons, association cortex and functioning of right and left hemisphere

Perception ***

Sensory basis of perception, various perceptual processes-attention, form perception, visual depth perception, individual differences in perception.

Learning ***

Conditioning: classical and instrumental, cognitive learning

Memory ***

Information processing theories, phases of memory, Short term and Long term memory, Forgetting, Amnesia

Thinking ***

The thinking processes, concepts in thinking, problem solving, decision making, creative thinking

Motivation and Emotion ***

Approaches to motivation, Types of motives- Biological and Social, frustration and conflicts of motives, types of conflicts and its management, perception of emotion, physiology of emotions, coping with stress, Theories of emotions

Personality ***

Nature of personality, theories of personality: Trait and type Theories, Dynamic theories: Freud, Adler, Jung, Horney, Social learning theories: Dollard and Miller, Skinner, Bandura, Humanistic theories: Rogers and Maslow, assessment of personality

Attitude and social relationship *

Nature of attitudes, measurements of attitudes, attitude theories, attitude change, attitude and behavior, interpersonal attraction, development and maintenance of relationships

Developmental psychology *

Nature versus nurture, methods of studying development, stages of development during infancy, adolescence & old age - cognitive, social & emotional, adjustment problems

Psychological assessment and testing *

Types of test, nature of intelligence, assessment of intelligence, individual difference in intelligence, behavioral assessment

Theory for psychological distress**

Rapport formation, doctor-patient relationships, Approaches - Biomedical, psychodynamic, Humanistic and Existential, Behavior, Cognitive, therapy for groups, community psychology

RECOMMENDED BOOKS:-

1. Introduction to psychology - Morgan CT & King RA (7th Ed.)
2. Introduction to psychology - Munn NL

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	40	+	10	=	50

THEORY EXAM

Section – I (10 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

6. EXERCISE THERAPY & BIOMECHANICS-II

OBJECTIVES:-

At the end of the course the candidate will be able to

1. describe the biophysical properties of connective tissue, and effect of biomedical loading and factors which influence the muscle strength and mobility of articular and periarticular soft tissues
2. acquire the skill of assessment of isolated and group muscle strength functionally and objectively respectively
3. analyze human posture and its associated problems, its management
4. analyze various normal musculo-skeletal movements, during breathing, gait and daily living activities in terms of bio-mechanical and physiological principles

5. describe and demonstrate various therapeutic exercises with its technique; including chest physiotherapy on self and also acquire the skill of application on model

6. to be able to demonstrate, general fitness, exercises and shall gain fitness for self.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

EXERCISE THERAPY

MOBILIZATION

1. Stretching ***

Causes of restriction of movements, abnormal / pathological end feel, bio-physical properties of connective tissue(contractile and non-contractile), elasticity, plasticity, response to sudden / slow/ sustained loading, stress and strain curve, creep, hysteresis.
Definition of terms related to stretching; tissue response towards immobilization and elongation, determinants of stretching exercise, effects of stretching, inhibition and relaxation procedures, precautions and contraindications of stretching, techniques of stretching

2. Peripheral Joint mobilization ***

Manipulation: glides, rolling, spin, types of joint shapes, methods of application, indications, contraindications and precautions

3. Traction ***

Types of traction, principles and application of spinal traction, indications and contra indications

CPM ***

Definition, method of application, indications, contraindications and precautions

Manual muscle testing ***

Introduction to MMT, Oxford scale of muscle gradation, principles, aims, indications & limitations.
- Techniques of MMT for upper limb (group & individual muscle)
- Techniques of MMT for lower limb (group & individual muscle)
- Techniques of MMT for spine

Trick movements ***

Resisted Exercise (PRE) ***

Factors that influence the strength of the normal muscle, principles, indications, contraindications, precautions of resisted exercise
Types of resisted exercises: manual and mechanical resisted exercise, isometric exercise
Dynamic exercise: Concentric and eccentric, dynamic exercise- constant versus variable resistance, isokinetic exercise
- Open chain and closed chain exercise
- De Lormes, Oxford, Mac Queen, circuit weight training
- Multiple angle isometrics, isokinetic regimens
- Plyometrics *
- Re-education of muscle and restoration of muscle strength

Proprioceptive neuromuscular facilitation ***

Introduction, response of neuromuscular mechanism, basic techniques of PNF, PNF patterns - upper limb, lower limb, head, chest, face

Special techniques - repeated contractions, slow reversal, contract and relax, hold-relax, rhythmic stabilization

Functional re-education ***

Turning in lying, lying to sitting, activities on the mat/bed, movement and stability at floor level, sitting activities and gait; lowerlimb and upperlimb activities

Posture ***

Definition, types, factors influencing posture, regulation of postural reflex mechanism, pelvic tilt and postural deviations of spine and its exercises.
Crawling Exercises: principles, types, effects and uses of Clapp's crawl

Breathing exercise ***

Mechanisms of normal breathing, muscles of respiration, changes in thoracic cage during the process of respiration, segmental and diaphragmatic breathing exercise, pursed lip breathing, forced expiratory type of breathing exercises, glossopharangeal breathing*

Postural drainage ***

Definition, assistive measures, techniques, indications and contra-indications, modified postural drainage

Aerobic Exercise ***

Physiological effects and therapeutic uses of aerobic exercises
Fitness testing, stress testing for healthy and convalescent individuals
Exercise programme to test - strength, flexibility, endurance and skill

BIO-MECHANICS

Bio-mechanics of joints ***

Kinetics, kinematics and pathomechanics of joints: hip, knee, ankle, foot, shoulder, elbow, wrist and hand

Mechanics of the thorax ***

Movement between ribs and vertebrae, sternum and ribs
Pathomechanics of respiration

Bio-Mechanics of spinal column ***
Spinal curves, articulations, non-contractile soft tissue of column, IV disc, ligaments, intrinsic equilibrium, movements of spinal column and muscle mechanics

Mechanics of Pelvic complex ***

Pelvis at rest, in standing, in motion, pathomechanics of pelvis

Kinematics and kinetics of ADLs ***

Supine to sit, sit to stand, squatting, climbing up and descending, lifting, pulling-pushing, overhead activities, walking, running, jogging

Locomotion ***

Normal gait analysis: definition of gait, phases of normal gait with kinetic and kinematics. Gait training, walking aids and crutches, its measurement, pre ambulatory training, crutch walking

Postural strain and occupational hazards **

Correct use of body mechanics at home, at school, at work, recreation, particular application for patients, physiotherapists and other staff

PRACTICALS:

Skills to be practiced on peer/model

RECOMMENDED BOOKS:-

1. Therapeutic exercise - Kisner and Colby
2. Principles of exercise therapy - Dina Gardiner
3. Muscle testing - Daniel and Worthingham
4. Practical exercise therapy - Margaret Hollis & Cook
5. PNF - Knott and Voss
6. Aquatic rehabilitation - Richard g. Ruoti
7. Clinical kinesiology - Brunnstrome
8. Joint structure and function - Cynthia Norkin

REFERENCE BOOKS:-

1. Muscle testing and function with posture and pain – Florence Kendall
2. Therapeutic exercises - Basmijen & Wolf
3. Clinical kinesiology for physical therapist assistance – Lynn Lippert
4. Muscle stretching – Olaff

Scheme and the Structure of Examination:

	External	+	Internal		Total
Theory -	80	+	20	=	100
Practical -	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

Practical Exam

1. Long Case (any one of the following) 35 marks

   (Mobilization, MMT with isolation, Muscle length test & passive stretching, functional reeducation, locomotion, breathing exercises, postural drainage)

2. Short Case (any one of the following) 25 marks

   (Bio-mechanics of joints and ADLs, traction, CPM, PNF, PRE, Aerobic exercises, posture)

3. Viva Voce 15 marks

4. Journal 05 marks

6. RADIOLOGY

OBJECTIVES:-

At the end of the course the candidate will be able to

1. identify common chest conditions together with basic traumatic, infective, inflammatory and degenerative conditions and bony skeletal

2. read CT, MRI of different joints.

SYLLABUS:-

1. Introduction to Radiology
2. Importance of Radiology in Physiotherapy
3. X-rays of fractures of different bones in the body
4. X-rays of different stages of fracture healing
5. X-rays of different Orthopedic conditions - Osteoarthritis, Rheumatoid arthritis
6. Cervical & lumbar spondylosis, foot deformities etc.
7. X-rays of common chest conditions
8. C.T Scan, M.R.I., Angiography, 3D reconstruction of bones & joints

RECOMMENDED BOOKS:-

1. Chest X-ray interpretation - Michael Darby et al.
2. Bone and joint imaging - Donald Resnick

7.YOGA AND NATUROTHERAPY

OBJECTIVES:-

At the end of the course the candidate will be able to

1. Comprehend the use of various allied therapeutic sciences in health care delivery.

YOGA

Yogasanas and their scientific studies

NATUROTHERAPY

Principles of application, indications

ANNEXURE-5

Syllabus for the subjects of TY BPT

MEDICINE-II

(NEURO MEDICINE & PAEDIATRICS)

NEURO MEDICINE

OBJECTIVES:-

At the end of the course, the candidate will be able to

1. describe etiology, patho-physiology, sign and symptoms, clinical evaluation and management of the various neurological conditions with interpretation of laboratory & radiological investigations.

SYLLABUS:-
(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Classification of neurological involvement depending on level of lesion ***

Cerebro-vascular diseases ***

Anatomy & physiology of Pyramidal tract, cerebral circulation

Define stroke, TIA, RIA, stroke in evolution, classification, risk factors, causes of ischemic stroke & hemorrhagic stroke, signs & symptoms based on Level of Lesion & management. Hemiparesis & approach to a case with hemiparesis

Extra Pyramidal system disorders ***

Anatomy & physiology of extra pyramidal system. Parkinson's disease & overview about other extra pyramidal system disorders. Involuntary movements. Overview about Wilson's disease

Cerebellar disorders ***

Anatomy & physiology of Cerebellum. Various disorders of cerebellum with emphasis on clinical presentation of cerebellar disorders. Ataxia & approach to a case with ataxia

Dementia - Alzheimer's Disease ***

Seizures & Epilepsy disorders ***

Demyelinating disorders

With emphasis on multiple sclerosis ***

Infectious disorders of nervous system ***

Meningitis, encephalitis, overview of ADEM
Neurological involvement in HIV-AIDS

Motor neuron diseases ***

With emphasis on Amyotrophic lateral sclerosis. ***

Disorders of Autonomic nervous system **

Coma & approach to a case with coma ***

Cranial nerve disorders ***

With emphasis on Bell's palsy & trigeminal neuralgia, bulbar & pseudobulbar palsy

Disorders of spinal cord ***

Anatomy & physiology of spinal cord, cauda equina.
Emphais on Acute transverse Myelitis, SACD, Syringomyelia, A-V malformations, Paraparesis & quadruparesis

Peripheral neuropathy ***

Definition, classification, etiology, clinical features, investigations and management
Guillain Barre syndrome ***

Disorders of neuro-muscular junction ***

With emphasis on Myasthenia Gravis

Muscle disorders ***

Muscular Dystrophies, Inflammatory Disorders:Polymyositis, Dermatomyositis & inclusion body myositis

Tetanus ***

Overview of syncope, giddiness & vertigo **

Cerebro Spinal Fluid ***

Formation & absorption, status in various disorders
Raised intra-cranial tension

RECOMMENDED BOOKS:

1. Harrison's Principles of Internal Medicine
2. Principals of Neurology - Raymonds D. Adams and Victor (8^{th} Ed.) 2005.
3. Brain's diseases of Nervous system - Dejong (11^{th} Ed.)
4. Neurological Examination of clinical practice - Bickerstaff (6^{th} Ed.)

PAEDIATRICS

OBJECTIVES:-

At the end of the course the candidate will be able to

1. describe normal development and growth of a child, importance of immunization and breast feeding and psychological aspect of development
2. describe neuro muscular, musculo skeletal and cardio pulmonary conditions related to immunological conditions, nutritional deficiencies, infectious disease and genetically transmitted conditions
3. acquired skill of clinical examination of a neonate / child with respect to neurological, musculoskeletal and respiratory function.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Normal development and growth ***

Including physical, social and adaptive development

Immunization ***

National immunization schedule

Perinatal problems and management ***

Neonatal assessment and management in terms of early detection and intervention of high risk babies (e.g. Low birth weight - LBW)
- APGAR score
- KMC (kangaroo mother care) and positioning

Breast feeding & complimentary feeding ***

Common developmental disorders ***

Causes, clinical features and medical management

Cerebral Palsy ***

Causes, types, clinical manifestations, medical management

Epilepsy ***

Types, diagnosis and treatment

Congenital neuromuscular and orthopedic disorders ***

Peripheral neuromuscular disorders emphasizing on polio, spinal muscular atrophies, muscular dystrophies, myopathies

Congenital cardiovascular problems – management **
Respiratory conditions **

asthma, TB, pneumonia, bronchiectesis
Acute pediatric respiratory distress syndrome – intensive pediatric care

Learning and behavioral disorders **

Hyperactivity, Autism, challenging behaviours, educational delay, the clumsy child
Thumb sucking and harmful behavior, relationship of child-parent-teacher

Mental retardation ***

Etiological factors, types, symptomatology, treatment

Hereditary neuromuscular disorders ***

Down's syndrome

Malnutrition and vitamin deficiency ***

Associated systemic conditions – rickets, skin conditions, deficiency, neuromuscular conditions

Childhood obesity and its complication ***

CNS involvement in children**

Tubercular meningitis, tetanus and other infective condition, hydrocephalus, neural tube defects

Indications, assessment and precautions for cardio-respiratory rehabilitation in children *

RECOMMENDED BOOKS:-

1. IAP textbook of pediatrics (4th Ed.)
2. Textbook of pediatrics - O.P. Ghai
3. Achar's textbook of pediatrics

Scheme and the Structure of Examination:

		External	+	Internal		Total
Neurology	-	40	+	10	=	50
Paediatrics	-	40	+	10	=	50

<u>THEORY EXAM</u>

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks) Neurology

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

Section – III (30 marks) Paediatrics

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

2. SURGERY

- General Surgery & ENT

- Cardiothoracic Surgery & Neuro Surgery

GENERAL SURGERY

OBJECTIVES:-

At the end of the course, the student will be able to

1. describe the effects of surgical trauma and anesthesia in general

2. classify, clinically evaluate and describe the surgical management in brief in
   a) wounds-ulcers b) burns

3. describe pre-operative evaluation, surgical indications and various surgical approaches in various abdominal conditions and peripheral vascular conditions

4. recall the surgical approaches in the form of line diagram and will be able to describe the components of soft tissues cut to reach the target tissue, and the possible post operative complications in movement

5. clinically evaluate post operative abdominal conditions with special reference to the cardio-vascular and pulmonary function, describe post operative management in brief.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Haemorrhage, shock, water and electrolyte balance ***

Acute infection, inflammatory fever, bacteriemia, septicemia, pyaemia, toxaemia specific types – cellulitis **

Lymphangitis, abscess with special reference to hand infections, carbuncle **

Specific conditions ***

Tetanus, gas gangrene, hospital infection, cross infection with modes of spread and prevention. General survey of chronic inflammation, actinomycosis

Wound ***

General survey of trauma, pathology and clinical features of wound repair:
primary, secondary and tertiary wound healing. Clean wounds, contaminated wounds and infectious wounds, principles of treatment, survey of factors affecting wound healing, ulcers and gangrene

Burn ***

Definition, classification, causes, prevention, pathological changes, clinical features, complications and management

Skin Grafts: types, grafting procedures, survival of skin graft
Flaps: types and uses of flaps

Demonstration

Various abdominal incisions (status of wound)
Various external aids (drainage tubes, catheters, naso-gastric tubes, IV lines etc.)

Abdominal surgeries

Indications, Incisions, Physiological changes and Complications following Common operations like Cholecystectomy, Colostomy, Ileostomy, Gastrectomy, Hernias, Appendicectomy Mastectomy, Neprectomy, Prostatectomy (surgeries**, post op complications & management ***)

Anesthesia - types & effects ***, O.T. demonstrations **

Problems of trauma to hand and their management, urinary tract infection

Breast surgery ***

Indications, complications, management including prosthesis

Principle of cineplasty, tendon transplant ***

Cosmetic surgery **

Surgical Oncology **

Cancer: definition, types, clinical manifestations of cancer, management

CLINICAL:

The student will be exposed to various clinical cases, where possible, through case discussions and ward rounds / OPD

Evaluation / presentation and recording of one case each in burns, wound and ulcer, post radical mastectomy, post abdominal surgery

Observation: one abdominal and one surgery of skin graft / flap

ENT

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Anatomy & Physiology of Hearing ***
Assessment & Management of Hearing Loss **

Introduction to Disease of ENT
Otitis media, Sinusitis & Rhinitis **

Facial Nerve Palsy
Causes & Management ***

Larynx & Associated functional paralysis with tracheostomy & Care of tracheostomy ***

Vertigo
Causes, Assessment & Management ***

CARDIOTHORACIC SURGERY & NEURO SURGERY

Objectives:-

At the end of the course, the student will be able to

1. describe types of incision, pre and post operative assessment and complications of Cardio-thoracic surgery and their management
2. clinically evaluate post operative cardio-vascular and pulmonary function status
3. describe the management of head injury, spinal surgeries, intracranial tumors, peripheral nerve lesions and pain
4. read and interpret investigations including findings of the x-ray chest, CT scan and MRI scan.

SYLLABUS:-

CARDIOTHORACIC SURGERY

Basic anatomy ***

Chest wall, trachea and bronchial tree, lungs and broncho pulmonary segments
Pleura and mediastinum

Investigation of lung disease

Pulmonary function tests ***, endoscopies **

Chest injury ***

Common suppurative disease of lung ***
Bronchiectesis, lung abscess

Bronchogenic carcinoma ***

Common surgeries of chest ***

Throacoplasty, pulmonary dissection, thoracotomy
Pneumothorax, hydrothorax, heamothorax, hydro-pneumothorax, empyema

Common disease of oesoaphagus and related conditions causing dysphagia **

Surgery of portal hypertension *

Surgery of pulmonary tuberculosis ***

Basic anatomy of heart, great vessels ***

Investigation of patient undergoing cardiac surgery ***

Surgery of heart and great vessels ***

Cardiac arrest, its management **
Basic principles of open heart surgery ***

Heart lung bypass (extra co-portal circulation)

Common disease of heart **

Requiring surgery of both-congenital and acquired including open heart surgery

Common drugs used in cardiac surgery, its uses, side effects *** Overview of common vascular disease and common vascular surgeries ***

CLINICAL: Examination of patients as regard chest & heart disease
Radiology –X-ray studies-X-ray chest on various lung disease

NEURO SURGERY:

Clinical features and management of the following:

Congenital and childhood disorders **

Hydrocephalus, spina bifida

Trauma ***
First aid and management of sequelae of head injury and spinal cord injury

Disease of the spinal cord ***
Craniovertabral junction anomalies, syringomyelia, cervical and lumber disc disease tumors, spinal arachnoiditis

Peripheral nerve disorders ***

Peripheral nerve injuries, localisation and management of entrapment neuropathies

Intracranial tumors **

Broad classification, signs and symptoms

Pre operative assessment, indications and contra indication for neurosurgery **

RECOMMENDED BOOKS:-

1. Under graduate surgery - Nan
2. Bailey and love's short practice of surgery (21st Ed.)
3. General surgical operations - Kirk and Williamson
4. Chest disease - Corofion and Douglos
5. Textbook of heart, chest, vascular disease for physiotherapy - Patricia A Downie

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks) General Surgery & ENT

Q-2 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

Section – III (30 marks) Cardiothoracic Surgery & Neuro Surgery

Q-4 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

3. OBSTETRICS AND GYNAECOLOGY

OBJECTIVES:-

At the end of the course, the student will be able to

1. describe the normal and abnormal physiological events during the puberty, labor, puerperium, post natal stage and menopause
2. discuss various complications during pregnancy, labor, puerperium and postnatal stage, pre and post menopausal stage and various aspects of urogenital dysfunction and the management in brief
3. acquire knowledge in brief about intra uterine development of the fetus
4. acquire the skill of clinical examination of the pelvic floor
5. acquire the skill of the clinical examination of pregnant woman.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Anatomy and physiology ***

Female reproductive organs

Physiology of Puberty & Menstruation ***

Abnormalities & common problems of menstruation

Pregnancy ***

Fertilization, development of the fetus, normal gestation, abnormal / multiple gestations, common complications during pregnancy like PIH, eclampsia, diabetes, Hepatitis, German Measles, TORCH infection
Diagnosis of pregnancy, physiological changes during pregnancy

Musculoskeletal disorders during pregnancy ***
Labor ***

Normal: events of Ist II nd & III rd stage of labor
Complications during labor & management
Caesarian section

Post Natal ***

Puerperium, lactation, methods of contraception, complications of repeated child bearing with small gaps

Abortion, Multiple pregnancy, MTP *

Family planning **

Uro-genital dysfunction ***

Uterine prolapsed: classification & management (Conservative / Surgical)
Cystocoele, rectocoele, enterocoele

Neoplasm of Female reproductive organs **

Surgical management

Pre, peri & post menopause ***

Physiology, complications & management

Pelvic Inflammatory Diseases ***

With special emphasis to backache due to Gynaec / Obs. Conditions

CLINICAL:

Independent clinical examination presentation and recording of a) pelvic floor
b) pregnant uterus c) mothers during peurperium

Evaluation & presentation of two cases each in
1. Uro-genital dysfunction
2. Antenatal care
3. Postnatal care
- following normal labor
- following Caesarean section
4. Pelvic Inflammatory Diseases

OBSERVATION – One Normal & One Caesarian delivery, One case of Tubectomy & One Hysterectomy / Repair of the Uro-genital Prolapse.

RECOMMENDED BOOKS:

1. Textbook of Gynecology by Dutta
2. Textbook of Obstetrics by Dutta

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	40	+	10	=	50

THEORY EXAM

Section – I (10 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

4. COMMUNITY MEDICINE

OBJECTIVES:-

At the end of the course the candidate will be able to

1. describe the concept of health and diseases, natural history of diseases
2. describe the health administration at various levels (Centre and State), health care delivery at urban and rural areas
3. describe the health problems of vulnerable groups and national health programmes
4. explain principles and philosophy of health education and health education tools
5. describe the role of various health agencies, NGOs at international and national level
6. identify occupational health hazards and its management

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

General concept of health and disease **

With reference to natural history of disease with pre-pathology phase
The role of social economics in communities

Epidemiology and scope ***

Public health administration ***

Overall view of the health administration setup and central and state levels. Health care delivery programs in urban and rural areas, health and population statistics

The national health programs ***

Highlighting the role of social, economic and cultural factors in the implementation of the national programs

Health problems of vulnerable groups ***

Pregnant and lactating women, infants and pre-school children, occupational groups and geriatrics

Occupational health ***

Definition, scope, occupational diseases and hazards
Social security and other measures for the protection from occupational hazards, accidents and diseases

Family planning ***

Objectives of national family planning programs and family planning methods
General idea of advantages and disadvantages of methods

Mental health ***

Community aspects of mental health: role of physiotherapists / therapists in mental health problems such as mental retardation

Nutrition and Health **

Classification of foods, nutritional profiles of principal foods, nutritional problems in public health, community nutrition programmes

Environment and Health **

Components of environment, water and air pollution and public health: Pollution control, disposal of waste, medical entomology

Communicable diseases ***

An overall view of communicable diseases classified according to principal mode of transmission. Role of insects and other vectors

International health agencies *

Principles and process of communication **

IEC (Information Education and Communication)

Health education ***

Philosophy, main principles and objectives
Methods and tools of health education individual and group methods
The role of profession in health education
Role of other personal in health education, co-ordination and co-operation, health education with other members of the health team
Elements of planning health education programmes

Hospital waste management **

Sources of hospital waste, health hazards, waste management

Disaster Management ***

Natural and manmade disasters, disaster impact and response, relief phase, epidemiologic surveillance and disease control, nutrition, rehabilitation, disaster preparedness

RECOMMENDED BOOKS:-

1. Preventive and social Medicine – Park & Park

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100

<u>THEORY EXAM</u>

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ***** (must be from **must to know** area) 15 marks

Full question

OR

Full question

Q-5 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

5. ELECTRO THERAPY

OBJECTIVES:-

At the end of the course the candidate will be able to

1. recall the Physics – Principles and laws of electricity, Electromagnetic spectrum, Ultrasound
2. describe the electrical main supply, Electric shock – precautions
3. describe and identify various types of electrodes used in therapeutics, resistance offered by the skin and significance of various media used to reduce the same
4. describe the production, physiological effects, therapeutic uses, merits/ demerits, indications and contraindication of various Low, Medium and High frequency currents and modes. Describe the panel diagrams of the machine
5. acquire the skill of application of Low, Medium and High frequency currents on models for the purpose of treatment

6. describe the physiological effects and therapeutic uses of various therapeutic ions to be used for the application of Iontophoresis
7. describe effects of electromagnetic field at the cellular level and risk factors on prolonged exposure
8. describe the physiological effects and therapeutic uses of various topical pharmaco-therapeutic agents to be used for the application of phonophoresis
9. acquire an ability to select the appropriate mode as per the tissue specific and area specific application.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

LOW FREQUENCY CURRENT

Review of physics ***

Current, electricity, Ohm's law, Resistance, Rheostats, potentiometers, Electromagnetic induction, capacitors, valves, semiconductors and transistors

Nerve Muscle Physiology ***

Resting potential, action potential, propagation of action potential, motor unit, synapse and synaptic transmission of impulses. Effect of negative and positive electrodes on nerve & accommodation

Electric shock ***

Causes, severity, treatment and precautions
Earth shock and its precautions

Faradic Current ***

Definition, characteristic and modified faradic current, sinusoidal current, parameters of faradic stimulation, physiological and therapeutic effects of faradic-stimulation. Indication, contra-indications and precautions, techniques of stimulation- group muscle stimulation, faradic foot bath, faradism under pressure and pelvic floor muscle re-education

Interrupted Direct Current ***

Introduction & characteristics, Parameters of stimulation, physiological and therapeutic uses of stimulation, precautions

Galvanic Current ***

Introduction & characteristics, Parameters of stimulation, physiological and therapeutic uses of stimulation, precautions

Iontophoresis ***

Definition, principles of iontophoresis, physiological and therapeutic uses, indications, techniques of iontophoresis, principles of treatment, contra-indications and dangers

TENS ***

Definition, types, Theories of pain modulation emphasizing on "Pain gate" theory, techniques of treatment, indication and contra –indications

MEDIUM FREQUENCY CURRENT

Interferential current ***

Definition, characteristics, physiological & therapeutic effects of Interferential current, techniques of application, indications, contra-indications and precautions

Bio-feedback ***

Introduction, principles of Bio-feedback, therapeutic effects of bio-feedback, Indications and contra-indications, techniques of treatment

Advanced Electrotherapy **

Computerization in electrotherapy, Programming of parameters of treatment, appropriate selections of parameters and combination therapy, Combination therapy-principles, therapeutic uses and indications like, Ultrasound therapy with stimulation or TENS etc.

Introduction to Russian current, Dia-dynamic current, HVPGS and Micro currents

Electrical currents for **Care of the wound**

HIGH FREQUENCY CURRENT

Short Wave Diathermy (SWD) ***

Introduction, physiological effects and Therapeutic effects of SWD, methods of application (capacitor field method and cable method etc.)

Techniques of treatment, indication, contra-indications and dangers

Pulsed SWD ***

Definition, characteristics, mechanism of work, physiological effects and therapeutic effects, indications, techniques of application, principles of treatment and contra-indications

Ultrasonic Therapy ***

Introduction and characteristics, Ultrasound Therapy parameters, coupling media, therapeutic effects, indications contra-indications and dangers, testing of apparatus, techniques of application & dosage, Phonophoresis

Electromagnetic waves ***

Electromagnetic spectrum, physical properties of electromagnetic radiations-reflection, refraction, absorption penetration, Grothus' law, Cosine law, Inverse square law and its practical application

Cellular bio-physics – reception and emission of electromagnetic signals
Environmental currents and fields – risk factors on prolonged exposure to electromagnetic field

Infra Red Rays (IRR)***

Production of infra red rays, luminous and non – luminous generators, penetration, technique of application, physiological effects and therapeutic uses of infra red rays, duration and frequency of treatment, indications and contra indications, dangers and precautions.

Ultra Violet Rays(UVR) **

Production of UVR, test dose, physiological effects of UVR dosimetry in UVR. PUVA

LASER ***

Introduction and characteristics, effects on tissue, therapeutic effects, principles of application, indications, contra-indications and dangers

Microwave Diathermy (MWD) ***

Introduction and characteristics, physiological effects, therapeutics effects, techniques of application and principles of treatment, indications, contra-indications and dangers

Superficial heat modalities ***

Paraffin wax bath: structure of the apparatus, composition of wax and mineral oils physiological effects and therapeutic uses of wax bath, technique of application

Other Heating Modalities: Heating pad, moist heat and fluidotherapy

Cryotherapy ***

Physiological effects and therapeutic uses of ice therapy
Techniques of application, contra – indication to ice treatment

Hydrotherapy ***

Properties of water buoyancy, effects of buoyancy on movement, Hubbard tank, contrast bath, whirlpool bath

Care of the wound***

UVR, LASER and Ultrasound

RECOMMENDED BOOKS:-

1. Electrotherapy explained - Low & Reed
2. Clayton's electrotherapy (6^{th} and 9^{th} Ed.)
3. Clinical electrotherapy - Nelson & Currier

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100
Practical	-	80	+	20	=	100

<u>THEORY EXAM</u>

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR

Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

Practical exam

1. Any one of the following 25 marks

   (Motor points, Faradism under pressure, Faradic bath, Muscle reeducation including pelvic floor muscles, SWD, UVR, US)

2. Any one of the following 25 marks

   (Ionization, TENS, IFT, IRR, MWD, LASER, cryotherapy, superficial heat modalities - PWB, MH etc.)

3. Spots 15 marks

   a. Panel diagram of an equipment (5 minutes, 5 marks)
   b. Testing of equipment

(Two equipments – 5 minutes each)
(5 marks each – 10 marks)

4. Viva Voce 10 marks

5. Journal 05 marks

6. PHYSICAL AND FUNCTIONAL DIAGNOSIS

OBJECTIVES:-

At the end of the course, the candidate will be able to

1. describe the human development & maturation; with special emphasis to psycho-motor development, maturation & alteration during aging process

2. acquire the skill of detection & objective documentation of the Neurological, Musculoskeletal, Cardiovascular & pulmonary dysfunctions such as pain, altered muscle power, mobility, endurance, limb length, posture, gait, hand function & A.D.L. in adult & pediatric conditions & acquire skill & to arrive at the Functional diagnosis as per International Classification of Functioning(ICF)

3. describe the physiology of nerve impulse, motor unit, its electro-physiological character and acquire the skill of performance and interpretation of various electro-diagnostic tests in the assessment of peripheral nerve lesions

4. be able to do interpretation of common investigations used to arrive at the Physical & Functional diagnosis.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

General principles of Human development & maturation ***

1. Aspects: physical, motor, sensory, cognitive, emotional, cultural, social

2. Factors influencing human development & growth:
   Biological, environmental, inherited.

3. Principles of maturation
- in general
- in anatomical directional pattern
  cephalo – caudal
  proximo – distal
  centero – lateral,
  mass to specific pattern,
  gross to fine motor development

4. Reflex maturation tests

5. Development in specific fields: Oromotor development, sensory development, neurodevelopment of hand function

Electrodiagnosis ***

1. Bioelectricity-Physiology of generation & propagation of action potential, volume conduction

2. Therapeutic current-as a tool for electrodiagnosis

3. Physiological principles, use of alternating & direct currents in electro-diagnosis such as sensory & Pain threshold, Pain tolerance,-Short & long pulse test, S.D. curves, Chronaxie & Rheobase, accommodation ratio,

4. Principles of nerve conduction studies, late responses *****

5. E.M.G. instrumentation, basic components, panel diagram, types of electrodes *****

6. Principles of Electro- myography, motor unit –Normal characteristics-activity at rest, recruitment/frequency pattern at minimal activity, Interference pattern

Assessment of Neurological dysfunction ***

1. Higher functions, cranial nerves, sensations & sensory organization, body image, tone, reflexes: superficial & deep, voluntary control, muscle strength, co-ordination, balance, posture, gait
2. Scales: FRT, Berg's Balance, modified Ashworth, Glasgow Coma, TUG, FIM

3. Functional diagnosis using ICF

4. Interpretation of electro diagnostic findings, routine biochemical investigations

Assessment of Musculoskeletal Dysfunction ***

1. Tightness, deformity, joint mobility, muscle strength, limb length, trick movement, girth, posture, gait, special tests
2. Functional diagnosis using ICF
3. Interpretation of X-ray of extremities & spine, routine bio-chemical investigations, CT scan, MRI *

Assessment of cardio -pulmonary dysfunction ***

1. Vital parameters, chest expansion, chest excursion, breath holding test, breath sounds, rate of perceived exertion (RPE), peak flow rate
2. Exercise Tolerance: six minutes walk test, theoretical bases of Bruce's protocol, step test
3. Ankle Brachial Index, tests for peripheral arterial & venous circulation
4. Functional diagnosis using ICF
5. Interpretation of X-ray chest, routine bio-chemical investigations, ABG, PFT, ECG (normal values) *

Assessment of pain ***

1. Intensity & quality
2. Objective assessment & documentation: VAS, Numerical Rating Scale. Other scales *

Assessment of Hand ***

1. Sensations, mobility of joints, strength
2. Special tests
3. Hand function:Precision & power grips

Assessment of Obesity ***

1. Classification
2. Assessment – BMI, Waist circumference, Waist – Hip ratio

Introduction to Quality of Life Questionnaire ***

PRACTICALS:

Skills to be practiced on peer/model

Case presentation with Physical & Functional diagnosis in medical – surgical conditions

RECOMMENDED TEXT BOOKS:-

1. Paediatric developmental therapy - Sophie Levitt
2. Orthopedics physical examination by Magee
3. Physical Rehabilitation Assessment and Treament - O'Sullivan Schmitz
4. Electrotherapy explained - Low & Reed
5. Clayton's electrotherapy (6^{th} and 9^{th} Ed.)
6. Clinical Electro Therapy - Nelson-Currier
7. Clinical Electromyography - Mishra
8. Cash's textbook of chest, heart, vascular disorder for physiotherapist
9. Physiotherapy for respiratory and cardiac problems - Webber and Pryor
10. Cash's textbook of General Medicine and surgical conditions for physiotherapists

REFERENCE BOOKS:-

1. Clinical Electromyography - Kimura
2. Orthopaedic Physical therapy - Donnatelli
3. Exercise & Heart - Wenger
4. Exercise Physiology - Mc' Ardle
6. Orthopedic examination - Hoppenfield
7. Cardiorespiratory physiotherapy - Elizabeth Dean

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100
Practical	-	80	+	20	=	100

<u>THEORY EXAM</u>

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ***** (must be from **must to know** area) 15 marks

Full question

OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

Practical Exam

1. Long case - Assessment & PFD of 30 marks
   Medical or Surgical conditions (on patient)
   (Assessment only, no treatment plan)

2. Short case - Two evaluator skills (on model) 30 marks

a. Basic skills – Any two
   (Other than long case) (15 Marks)

b. Electro Diagnostic skill
   (S.D. Curve, F.G. test,
   Chronaxie & Rheobase,
   Accommodation ratio,
   Motor points) (15 Marks)

3. Spots – (5 spots, 3 marks each) 15 marks

(based on X-Ray, ECG, EMG, NCV,
PFT, ABG etc.)

4. Journal 05 marks

7. DERMATOLOGY

OBJECTIVES:-

At the end of the course, the students will be able to

1. acquire knowledge in structure and function of the skin and about various primary, secondary and special skin lesions related to systemic disorders
2. describe etiology, clinical features and management of bacterial, fungal, viral, allergic, autoimmune skin diseases
3. acquire knowledge in sexually transmitted diseases and leprosy.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Structure and function of normal skin ***

Primary, secondary and special skin lesions ***

Scabies ***, pediculosis *

Fungal infections of skin ***

Dermatophytosis, Tinea Versicolor, Candidiasis

Bacterial infections of skin

Impetigo, Boil ***, Furuncle**, Carbuncle **

Viral infections of skin

Herpes zoster ***

Warts, molluscum contagiosum *

Eczema ***

Psoriasisvulgaris, Vitiligo / Leucoderma ***

Acne, Alopecia *

Leprosy ***

Classification, Lepra reaction, clinical features , investigation, diagnosis and medical management

Skin diseases related to rheumatology diseases ***

Sexually transmitted disease

Syphills – primary & secondary, Skin disorders and HIV ***
Gonorrhoea, Chancroid *

RECOMMENDED BOOKS:-

1. An illustrated hand book of skin and STD with an update of HIV infection - Dr. Uday Khopkar
2. Rox burg's common skin diseases
3. Illustrated synopsis of Dermatology and Sexually Transmitted Diseases - Neena Khanna (4th Ed.)

8. PSYCHIATRY

OBJECTIVES:-

At the end of the course, the student will be able to

1. enumerate various psychiatric disorders with special emphasis to movement, pain and ADL & describe the various causative factors and methods of assessment and management
2. acquire the knowledge in brief about the pathological and etiological factors, common signs and symptoms and management of various psychiatric conditions
3. describe in brief the various treatment modalities commonly used.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Assessment***

History taking and mental state examination

Organic mental disorders***

Delirium and Dementia

Substance dependence***

Alcohol dependence

Schizophrenia, post partum psychosis and brief reactive psychosis ***

Mood disorders***

Bipolar Disorder, major depressive disorder

Anxiety disorder***

Panic disorder, generalized anxiety disorder, phobias-agoraphobia, social phobia (social anxiety disorder), obsessive compulsive disorder (OCD)

Dissociative conversion disorder *

Hysterical fits

Psychosomatic disorder*

Bronchial asthma, ulcerative colitis, peptic ulcer, thyrotoxicosis, rheumatoid arthritis, essential hypertension

Child psychiatry **

Mental retardation

Pharmacology **

Antipsychotics, antidepressants, anxiolytics, mood stabilizers

ECT **, **Psychotherapy***

RECOMMENDED BOOKS:-

1. Short textbook of Psychiatry - Niraj Ahuja (5th Ed.)
2. Textbook of Psychiatry - B.K.Puri

9. OPTHALMOLOGY

OBJECTIVES:-

At the end of the course, the students will be able to

1. acquire knowledge of structure and function of the eye
2. describe etiology, patho-physiology, sign and symptoms and clinical evaluation of common ophthalmic conditions related to Physiotherapy

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

1. Gross anatomical structure of the eye ***
2. Origin, insertion, nerve supply of extra ocular muscles ***

- Visual pathway and lesions

3. Ocular movements: normal and abnormal ***

   Causes, clinical features and treatment of disorders of occular movement occurring in disease such as myasthenia gravis, progressive supranuclear palsy and lower motor neuron diseases, paralytic squint, ptosis, nystagmus

4. Eye lesion in leprosy, including causes treatment and complication of lagopthalmos **
5. Lens: anatomy, cataract *
6. Glaucoma: open angle, close angle *
7. Refractive error *

10. ACUPUNCTURE AND MAGNETO THERAPY

OBJECTIVES:-

At the end of the course the candidate will be able to

1. Comprehend the use of various allied therapeutic sciences in health care delivery.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

<u>ACUPUNCTURE</u> **

Definition, principles, techniques, physiological and therapeutic effects, indications, contra indications and dangers

MAGNETO THERAPY **

Principles of application, Indications

ANNEXURE-6

Syllabus for the subjects of FINAL YEAR BPT
Scheme and structure for theory examination
Scheme and structure for practical exam for Physiotherapy subjects

1. PHYSIOTHERAPY IN NEURO-MUSCULAR CONDITION

OBJECTIVES:-

At the end of the course candidate will be able to

1. acquire the knowledge of normal neurodevelopment with specific reference to locomotion
2. assess, identify and analyze neuro motor and psychosomatic dysfunction in terms of alteration in the muscle tone, power, coordination, involuntary movements, sensations, perceptions etc.

3. correlate the assessment findings with provisional diagnosis and investigations such as EMG/NCS and arrive at Physical and functional diagnosis with clinical reasoning in various neuromuscular disorders

4. plan, prescribe and execute short term and long term treatment with special reference to relief of neuropathic and psychosomatic pain and use of various physiotherapeutic techniques/ modalities, including ergonomic advice and parent education in neuro pediatric cases

5. prescribe appropriate orthoses/splints and fabricate temporary protective and functional splints.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

- Review of basic neuro anatomy and physiology ***
- Physiotherapy techniques to improve tone, voluntary control, co-ordination ***

- Neuro physiotherapeutic Techniques:

  Concepts, principles, techniques and effects of: NDT, PNF, Brunnstorm movement therapy ***

  Vojta therapy, Rood's sensory motor approach, Contemporary task oriented approach **

- Application of skills as PNF, co-ordination, functional re- education, balancing exercise by using techniques based on neuro physiological principles ***
- Tools used for neuro rehabilitation like vestibular balls, tilt board etc. ***
- Application of transfer, functional re-education exercises & gait training ***
- Bladder training. **
- Developing a philosophy for caring. ***
- Prescription of appropriate orthotic devices & fabrication of temporary splints **
- Lifting techniques ***, wheel chair modifications, adaptive devices. **
- Ergonomic advice for prevention/rehabilitation to the patients / parents /care givers ***
- Education about handling of a patient. ***

Pediatric Neuro-physiotherapy ***

Use of various Neurophysiological approaches & modalities in high risk babies, minimum brain damage, developmental disorders, Cerebral palsy
Down's syndrome, Hydrocephalus, Spina bifida **

Assessment & management of brain Disorders ***

Stroke, Meningitis, Encephalitis, Head Injury, Parkinson's disease, parkinsonism syndromes, Multiple sclerosis
Brain tumors **

Assessment & management of spinal cord lesions and bladder dysfunction ***

Multiple sclerosis, transverse myelitis, Poliomyelitis/PPRP, syringomyelia, spinal cord injury and sub acute combined degeneration of spinal cord,
Motor neuron disease (ALS, SMA and other types), spinal tumors **

Assessment & Management of Cerebellar and Muscle Disorders ***

Ataxia, Friedriech's ataxia **
Muscular dystrophy (DMD) & other myopathies

Assessment & Management of disorders of neuromuscular junction **

Myasthenia Gravis

Assessment & management of neuropathies and nerve injuries ***

Emphasis on 5^{th}, 7^{th} and 8^{th} cranial nerves
Peripheral nerves
Polyneuropathy – Classification of Polyneuropathies

Pre and post surgical assessment & management in neuro surgery **

Hydrocephalus and myelomeningocele, C.V. junction anomalies, syringomyelia

Electro diagnostic procedures and prognosis in neurological disorders

SD curves ***, EMG & NCS *

RECOMMENDED BOOKS:-

1. Cash's textbook of Neurology for Physiotherapists

2. Neurological Rehabilitation - D Umphred
3. Physical Rehabilitation Assessment and Treatment - O'Sullivan Schmitz
4. Paediatric developmental therapy - Sophie Levitt
5. Neurological rehabilitation - Carr & Shepherd

REFERENCE BOOKS:-

1. Key issue in neurological physiotherapy - Ada / Canning
2. Elements of pediatric physiotherapy - Eckersley
3. Steps to follow - Davies

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100
Practical	-	80	+	20	=	100

<u>THEORY EXAM</u>

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

Practical exam

1. Long case 40 marks
2. Spots (5 spots - 3 marks each) 15 marks
   (3 minutes each)

   (based on EMG,NCS,SD curve,
   neuro assessment scales, orthosis
   and equipments etc.)
3. Viva Voce 20 marks
4. Journal 05 marks

2. PHYSIOTHERAPY IN MUSCULO-SKELETAL CONDITIONS

OBJECTIVES:-

At the end of the course the candidate will be able to

1. identify, discuss and analyze the Musculoskeletal dysfunction in terms of bio-mechanical, kinesiological and biophysical basis and correlate the same with the provisional diagnosis, routine radiological and electro physiological investigations and arrive at appropriate physical and functional diagnosis with clinical reasoning
2. describe as well as acquire the skill of executing short and long term physiotherapy treatment by selecting appropriate modes of mobilization/ manipulation, electrotherapy, therapeutic exercise and appropriate ergonomic advise for the relief of pain, restoration / maintenance of function & / or rehabilitation for maximum functional independence in ADLs at home & workplace

3. understand the nature of sports injuries, able to evaluate and treat sports injuries, understand the role of physiotherapist in training and rehabilitating a sports person

4. prescribe appropriate walking aids, orthoses and prosthesis

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

- Anatomy of bones and soft tissues (musculoskeletal system) ***
- Evaluation, interpretation of investigations & functional diagnosis (ICF) with appropriate clinical reasoning for planning & implementation of management techniques ***
- Planning, Prescription & Implementation of short term & long term goals with clinical reasoning ***
- Documentation ***
- Different physiotherapeutic techniques for functional restoration/ maintenance and prevention of disability ***
- Different electro therapeutic techniques for relief of acute and chronic pain, swelling, wound healing, re-education with clinical reasoning ***
- Different physiotherapeutic techniques to improve/maintain muscle performance ***
- Different physiotherapeutic techniques to increase joint mobility. ***
- Different physiotherapeutic strategies for correction / maintenance of good posture ***
- Different physiotherapeutic strategies to improve efficiency and safety of gait pattern ***
- Prescription of appropriate orthotic & prosthetic devices & fabrication of simple temporary splints ***
- Appropriate Home Program & Ergonomic advice for preventive measures & Functional efficiency at home & work place ***

Physiotherapy approach in traumatology ***

Definition of fracture, classification of fracture, signs and symptoms of fracture, healing process of fracture, factors affecting healing, methods of reduction, complications of fracture

Physiotherapy assessment in fracture cases ***

Principles of PT management in fractures - Guidelines for fracture treatment during period of immobilization and guidelines for treatment after immobilization period

Physiotherapy assessment and management of upper limb fractures and dislocations, lower limb fractures and dislocations including pelvis and spinal fractures

Physiotherapy assessment & management of soft tissue injury ***

Contusion, sprains, strains, ruptures

Physiotherapy assessment & management of degenerative conditions ***

Osteoarthritis (OA) with emphasize on Knee, Hip and Hand
cervical spondylosis, lumbar spondylosis

Physiotherapy assessment & management of inflammatory conditions ***

Rheumatoid arthritis (RA), ankylosing spondylitis (AS), Still's disease ** gout, periarthritis, bursitis, synovitis, capsulitis, tendinitis, tenosynovitis, fasciitis, Osgood Schlatter disease

Physiotherapy assessment and management of infective Conditions ***

Tuberculosis (TB) of spine and other major joints, osteomyelitis
Pyogenic arthritis, septic arthritis **

Physiotherapy assessment & management of congenital and acquired Deformities ***

Congenital - CTEV, CDH, Torticollis, pes planus, pes cavus,
Sprengel's scapula *, Madelung's deformity *
Acquired: scoliosis, kyphosis, coxa vara, genu varum, valgum and recurvatum, wry neck **

Physiotherapy assessment & management of spinal conditions ***

Spondylolisthesis, Spinal canal stenosis, Spondylolysis, Intervertebral disc prolapse, Sacro-iliac joint dysfunction, Coccydynia
Sacralisation, Lumbarisation, Spina bifida occulta **

Physiotherapy assessment & management of amputations ***

Definition, indications, types, levels of amputation of lower and upper extremities, pre and post operative assessment and management with emphasize on stump care and bandaging, pre and post prosthetic training and complete rehabilitation

Rehabilitation of patient with orthopedic surgery ***

Pre and post operative management of arthroplasty of all major joints, girdle stone arthroplasty **, arthrodesis, arthroscopy, oesteotomy
Reattachment of limb *

Physiotherapy assessment & management of re-constructive surgery ***

Cerebral Palsy, poliomyelitis, leprosy

Physiotherapy assessment & management of hand injury ***

Physiotherapy assessment & management of metabolic and hormonal disorders of the bone tissue ***

Osteoporosis, rickets,osteomalacia *

Physiotherapy assessment & management of miscellaneous orthopedic conditions ***

Mallet finger, trigger finger, De quervain's disease, metatarsalgia, hallux valgus, Depuytren's contracture, thoracic outlet syndrome, chondromalacia patellae, ganglion, tennis elbow, plantar fasciitis

Sports Medicine ***

1. Introduction & classification of sports injury
2. Aetiological factors
3. Prevention of sports injury
4. Frequency and site of injury
5. Investigation and assessment in sports injury

Management of sports injuries
Pharmacology in sports *
Rehabilitation in sports ***

RECOMMENDED BOOKS:-

1. Cash's textbook of Orthopedics for physiotherapists
2. Essentials of orthopedics and applied physiotherapy - Jayant Joshi
3. Tidy's Physiotherapy
4. Physical medicine and rehabilitation - O'sullivan
5. Essentials of Orthopaedics for Physiotherapist - John Ebnezar

REFERENCE BOOKS:-

1. Orthopedics physical examination - Magee
2. Orthopedic physical therapy - Donnatelli

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100
Practical	-	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

Practical exam

1. Long case 40 marks

2. Spots (5 spots - 3 marks each) 15 marks
   (3 minutes each)

   (based on X-ray- limb, spine,
   Orthosis, prosthesis, walking aids,
   exercise equipments, etc.)

3. Viva Voce 20 marks

4. Journal 05 marks

3. PHYSIOTHERAPY IN CARDIO-PULMONARY & GENERAL MEDICAL-SURGICAL CONDITIONS

OBJECTIVES:-

At the end of the course candidate will be able to

1. identify, discuss and analyze cardio vascular and pulmonary dysfunction based on pathophysiological principles and arrive at the appropriate physical and functional diagnosis

2. acquire knowledge of rationale of basic investigative approaches in the medical system and surgical intervention regimes related to cardio vascular and pulmonary impairment

3. execute the effective physiotherapeutic measures (with appropriate clinical reasoning) with special emphasis to breathing retraining, nebulization, humidification, bronchial hygiene, general mobilization and exercise conditioning in general medical and surgical conditions

4. acquire knowledge of the overview of patients care at the intensive care area, artificial ventilation, suctioning, positioning for bronchial hygiene and continuous monitoring of the patient at the intensive care area

5. acquire the skill of evaluation and interpretation of functional capacity using simple exercise tolerance tests, symptom limited tests

6. select strategies for cure, care and prevention to adopt restorative and rehabilitative measures for maximum possible functional independence of a patient at home, work place and in community

7. acquire the skill of basic cardiopulmonary resuscitation

8. acquire the knowledge of evaluation and physiotherapy treatment for obstetrics and gynecological conditions

9. acquire the knowledge of various conditions where physiotherapy plays a vital role in the rehabilitation (psychiatry, dermatology and ENT conditions)

10. assess the various degrees of burns, plan and implement physiotherapy techniques for the rehabilitation of a burn and wound patient.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Anatomy and physiology of respiratory system ***

Anatomy of thorax, biomechanics of thoracic cage, muscles of respiration, ventilation-perfusion matching /mismatching, compliance

Investigations and tests ***

Submaximal /maximal exercise tolerance testing
Cardiac & Pulmonary radiographs, PFT, ABG, ECG, hematological and biochemical Tests

Physiotherapy techniques to increase lung volume ***

Positioning, breathing exercises, neurophysiological facilitation of respiration, mechanical aids - Incentive spirometry, CPAP, IPPB

Physiotherapy techniques to decrease the work of breathing ***

Measures to optimize the balance between energy supply and demand, positioning, Breathing re-education – Breathing control techniques, mechanical aids: IPPB, CPAP, BiPAP

Physiotherapy techniques to clear secretions ***

Hydration, Humidification & Nebulization, Mobilisation and breathing exercises, postural drainage, Manual techniques: Percussion, vibration and shaking, ACBT, Autogenic Drainage, Mechanical aids: PEP, Flutter, IPPB, facilitation of cough and huff, suctioning

Physiotherapy in common complications following surgeries

Drug therapy ***

Drugs to prevent and treat inflammation, drugs to treat bronchospasm, drugs to treat breathlessness, drugs to help sputum clearance, drugs to inhibit coughing,

drugs to improve ventilation, drugs to reduce pulmonary hypertension, drug delivery doses, inhalers and nebulizers

Introduction to ICU & mechanical ventilator ***

ICU monitoring – apparatus, airways and tubes used in the ICU - Physiotherapy in the ICU – common conditions in the ICU
Mechanical ventilator: types, modes of ventilator, advantages and disadvantages Oxygen therapy, CPR, aseptic precautions

Physiotherapy assessment & management techniques in Obstructive lung conditions ***

Chronic bronchitis, emphysema, asthma, bronchiectasis, cystic fibrosis *

Physiotherapy assessment & management techniques in Restrictive lung conditions ***

Rib fracture, Pleural effusion, pleurisy and empyema, pulmonary embolism, pulmonary tuberculosis, atelectasis, pneumothorax, bronchopulmonary fistula, pneumonia, ARDS

Physiotherapy following Lung surgeries ***

Pre and post operative physiotherapy assessment and management in Lobectomy, Pneumonectomy, decortication, thoracoplasty

Pulmonary Rehabilitation ***

Definition, aims and objectives, team members, benefits, principles of exercise prescription and techniques of rehabilitation

Anatomy and physiology of cardiovascular system ***

Anatomy, blood supply and conduction system of heart

Physiotherapy assessment & management for cardiovascular disorders ***

Cardiovascular disease, congestive heart failure, myocardial infarction, valvular diseases of heart, cyanotic and acyanotic congenital heart diseases, endocarditis *

Cardiac Rehabilitation ***

Definition, aims and objectives, team members, benefits, principles of Exercise prescription and techniques of rehabilitation

Physiotherapy assessment & management of vascular diseases ***

Venous: Thrombosis, phlebitis and phlebo-thrombosis, varicose veins, DVT, venous ulcers
Arterial: Beurger's disease, acute and chronic arterial occlusion, lymphedema

Physiotherapy assessment & management for abdominal surgeries ***

Operations on upper gastro- intestinal tract - oesophagus- stomach- duodenum, operation on large and small intestine – apendicetomy, cholecystectomy, partial colectomy, illieostomy, nephrectomy
Hernia: herniotomy, herniorraphy,hernioplasty

Physiotherapy Assessment & management in Onco surgeries ***

Mastectomy: simple, radical
Hysterectomy, prostatectomy, neck dissection

Physiotherapy in Obstetrics ***

Electrotherapy and exercise therapy measures following pelvic repair, caesarean section

Wounds, local infections, ulcers, pressure sores ***

UVR and other electrotherapeutic modalities for healing of wound, prevention of hypergranulated scars, relief of pain and mobilization

Physiotherapy in burns, skin grafts and re-constructive surgery ***

Physiotherapy in ENT conditions ***

Nonsuppurative otitis media, chronic suppurative otitis media, otosclerosis, labyrinthitis and mastoidectomy resulting into facial palsy, laryngectomy, pharyngeo – laryngectomy, tracheostomy and its care, sinusitis

Physiotherapy in skin conditions ***

Leprosy, acne, alopecia, psoriasis, syphilis

Physiotherapy in psychiatric conditions ***

Schizophrenia, depression, psychosis, anxiety

Physical fitness ***

Energy system, Endurance, Aerobic Exercise, pacing of activity

RECOMMENDED BOOKS:-

1. Cash’s textbook of chest, heart, vascular disorder for physiotherapist
2. Cash’s textbook of General Medicine and surgical conditions for physiotherapists
3. Physiotherapy for respiratory and cardiac problems - Webber and pryor
4. Essential of cardiac pulmonary physical therapy - Hillegass and Sadowsky

5. Therapeutic exercise - Kisner and Colby
6. Tidy's textbook of Physiotherapy
7. Physiotherapy in obstetrics and gynecology – Polden

REFFERENCE BOOKS:-

1. The Brompton guide to chest physiotherapy - DU Gasket
2. Physical therapy for the cancer patient - MC Garvey
3. Physical medicine and rehabilitation - O'sullivan

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100
Practical	-	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

Practical exam

1. Long case	40 marks
2. Spots (5 spots - 3 marks each) (3 minutes each) (based on ABG, X-ray, ECG, PFT RPE, incisions, post operative external supports, endurance testing exercise equipment etc.)	15 marks
4. Viva Voce	20 marks
5. Journal	05 marks

4. PHYSIOTHERAPY IN COMMUNITY HEALTH

OBJECTIVES:-

At the end of the course, the candidate will be able to

1. describe the general concepts about Health, Disease & Physical fitness
2. describe national policies for the rehabilitation of disabled- role of IAP to promote physiotherapy as a health delivery system
3. describe the strategies to assess prevalence & incidence of various conditions responsible for increasing morbidity in the specific community, role of physiotherapy in reducing morbidity, expected clinical & functional recovery, reasons for non-compliance in specific community & environmental solution for the same
4. describe the evaluation of disability & planning for prevention & rehabilitation
5. describe CBR in urban & rural set up, WHO policies, concept of team work, role of multi- purpose health worker
6. identify with clinical reasoning the prevailing contextual (environmental & psycho-social, cultural) factors, causing high risk, responsible for various dysfunctions & morbidity related to lifestyle & specific community like women, aged, industrial

workers & describe planning strategies of interventional policies to combat such problems.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Concepts of community health ***

Preventive, promotive, restorative and rehabilitative
WHO definition of health and disease
Health delivery system - 3 tier

Disability types ***

Physical & Psychological
Evaluation, prevention & Legislation related to Persons with Disability (PWD)

CBR ***

Definition, principles, types (institutional, reach out and community), concepts, WHO policies
Principles of Team work of medical practitioner, Physiotherapist, Occupational Therapist, Speech & Audiology Therapist, Prosthetist & Orthotist, Clinical psychologist, vocational counsellor and social worker Role of Physiotherapy in team, concept of multipurpose health worker, role of Physiotherapy and strategies in 3 tier Health delivery system, communication strategies

Health Care ***

Prevention, Promotion & Restoration

1. in peri pubertal age group
2. in women-pregnancy, menopause
3. in Geriatrics- neuromusculoskeletal, cardiovascular, pulmonary, metabolic and degenerative conditions
4. in Obese / over weight
5. in Cardiovascular and Pulmonary conditions
6. in Diabetes
7. Health promotion for all

Women and child care ***

1. Antenatal exercises, Specific Breathing exercises, Relaxation, Postural training, Pelvic floor strengthening exercises with clinical reasoning
2. Physiotherapy during labor
3. Postnatal exercises program after normal labor / labor with invasive procedures with clinical reasoning
4. Menopause - Osteoporosis, Mental health, Physiotherapy management
5. Preterm babies
6. Adolescent age group
7. Nutritional disorders in women and children

Geriatrics ***

Physiology of aging, environmental changes and adaptations, balance and falls
Role of Physiotherapy in geriatric population

Industrial health ***

A) Ability Management

Job analysis - Job description, ergonomic evaluation, injury prevention

B) Environmental stress in the industrial area

1. Physical agents e.g. heat / cold, light, noise, vibration, UV radiation, ionizing radiation
2. Chemical agents-inhalation, local action and ingestion
3. Mechanical hazards-overuse/fatigue injuries due to ergonomic alternation and mechanical stresses

C) Mechanical stresses in various job related postures and activities

D) Psychological hazards

RECOMMENDED BOOKS:-

1. Textbook of Rehabilitation - S. Sunder
2. O' young physical medicine and rehabilitation secrets, JP bros, medical publishers, Bangalore Ist, Indian Ed. 1997
3. Textbook of preventive and social medicine - Park & Park
4. Women's health - Textbook for physiotherapists - Sapsford
5. Physical medicine & rehabilitation - Delisa

Scheme and the Structure of Examination:

		External	+	Internal		Total
Theory	-	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ***** (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

5. BIO-ENGINEERING

OBJECTIVES:-

At the end of the course, the candidate will be able to

1. acquire knowledge about biomechanical principles of application of variety of aids & appliances used for ambulation, protection & prevention
2. acquire in brief knowledge about various materials used for splints/Orthosis & prostheses and selection criteria for splints/Orthosis & Prostheses

3. acquire the skill of fabrication of simple splints made out of low cost material.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

1. Introduction and classification of aids and appliances ***
2. Biomechanical principles in designing of appliances, material used for fabrication & assessment procedures for static & dynamic alignment of the following Aids & appliances ***
3. Splints/Orthosis for spine-upper & lower limb, Prosthesis for Lower limbs, Upper limbs ***
4. Wheel chair prescription ***
5. Psychological aspects of orthotic and prosthetic application ***
6. Project – The students may be given a small project to fabricate 1 splint using POP, aluminum strips /sheets /wires, rubber bands, rexin, orfit etc **

RECOMMENDED BOOKS:-

1. Atlas of orthotics: Bio-mechanical principles and applications - St. Louis
2. American academy of orthopaedic surgeon: Atlas of limb prosthetic principles
3. ALIMCO volumes
4. Physical medicine and rehabilitation secrets - O'young
5. Physical Medicine and rehabilitation- Braddom

Scheme and the Structure of Examination:

	External	+	Internal		Total
Theory -	40	+	10	=	50

THEORY EXAM

Section – I (10 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks

(each carry three marks - no options)

***** Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

6. BIO-STATISTICS & RESEARCH METHODOLOGY

BIO-STATISTICS

OBJECTIVES: -

At the end of the course the candidate will be able to

1. recognise different variables as per their types and should be able to decide on how to treat them differently as per requirement
2. differentiate complete enumeration and various forms of sampling (random: simple, stratified, cluster, multi stage; non random: snow ball, quota, purposive, convenient) with understanding of merits and demerits of them
3. decide when to apply what test or a measure of central tendency according to the need of the data and objective
4. interpret a given output of regression or ANOVA according to the context.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

1. Introduction to statistical in physiotherapy
2. Understanding 'Data' and its types
3. Presentation of various data: tables, graphs and descriptive statistics
4. Measures of central tendencies(CT): mean, median, mode; merits and demarits; when to apply which measure of CT for the given data
5. Measures of dispersion: range, mean deviation, standard deviation, coefficient of varience
6. Application of normal distribution and its properties

7. Testing of hypothesis (measuring change):one sample with population, comparing two samples(Z test for proportion, difference of two proportion, independent sample 't' test, paired 't' test, chi square test
8. Conceptual understanding of correlation, linear and multiple regression, analysis of variance (ANOVA) and analysis of co-varience (ANCOVA)
9. Complete enumeration and sampling methods: random : simple, stratified, cluster, multi stage; non random: snow ball, quota, purposive, convenient
10. Simple statistical analysis through excel

RESEARCH METHODOLOGY ***

OBJECTIVES: -

At the end of the course the candidate will be able to

1. understand and differentiate various study design
2. List the need of methodical and regular literature search in research
3. Plan a study choosing an appropriate design for a given problem according to given objectives.

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

1. Introduction
2. Role of research in Physiotherapy
3. Components of research proposal – introduction and rationale, material & methods, results and discussion
4. Study designs
5. Where to look for good literature and why
6. Hierarchy of evidence
7. Critical appraisal of paper

RECOMMENDED BOOKS:-

1. An introduction to Bio-statistics- A manual for students in health sciences- PSS Sundar Rao
2. Methods in Bio-statistics by BK Mahajan

Scheme and the Structure of Examination:

	External	+	Internal		Total
Theory -	80	+	20	=	100

THEORY EXAM

Section – I (20 marks)

Q-1 MCQ (single best answer, each carry one mark, no negative marking)

Section – II (30 marks)

Q-2 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-3 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

Section – III (30 marks)

Q-4 LAQ* (must be from **must to know** area) 15 marks

Full question
OR
Full question

Q-5 SAQ Short answers (5X3) 15 marks
(each carry three marks - no options)

* Not withdrawing whatever is given above, inclusion of LAQ (Long Answer Question) is not mandatory. Instead SAQ (Short Answer Question) of 15 marks in which 4 questions should be included, out of which any 3 to be attempted (3 X 5 marks = 15 marks)

7. EVIDENCE BASED PRACTICE IN PHYSIOTHERAPY

OBJECTIVES:-

At the end of the course the candidate will be able to

1. understand concept of Evidence Based Practice and its implementation in Physiotherapy

2. search, review and use the evidences in Physiotherapy

SYLLABUS:-

(* MUST TO KNOW, ** GOOD TO KNOW, * DESIRABLE TO KNOW)**

Introduction to Evidence Based Practice

Definitions, Evidence Based Practice, Evidence Based Physiotherapy Practice

Concepts of Evidence based Physiotherapy

Awareness, consultation, judgment, creativity

Development of Evidence based knowledge

The individual professional, professionals within a discipline, professionals across disciplines

Evidence Based Practitioner

The reflective practitioner, the E model*

Finding the Evidence

Measuring outcomes in Evidence Based Practice, measuring health outcomes, measuring clinical outcomes, inferential statistics and causation

Searching for the Evidence

Asking questions, identifying different sources of evidence

Assessing the Evidence

Evaluating the evidence; levels of evidence in research using quantitative methods, levels of evidence classification system, outcome measurements, biostatistics, the critical review of research using qualitative methods

Systematically reviewing the evidence

Stages of systematic reviews, Meta analysis, the Cochrane collaboration

Using the evidence

Building evidence in practice, critically appraised topics (CATs)

RECOMMENDED BOOKS:-

1. Evidence Based Practice in Nursing and Health Care: A Guide to Best Practice- Bernadette Melnyk, Ellen Fineout-Overholt
2. Evidence-Based Rehabilitation: A Guide to Practice - Mary Law
3. Achieving Evidence Based Practice - Susan Hamer
4. The Evidence Based Practice - Stout, Randy A Hayes

8. MANAGEMENT AND ETHICS

OBJECTIVES:-

At the end of the course the candidate will be able to

1. describe Management and its principles, branches, theories of management and management in health sector and its application in Physiotherapy
2. describe the health policies of government of India and health care system in India
3. plan to organize a physiotherapy department
4. acquire the knowledge of ethical code of professional practice ,as well as its moral & legal aspects; & role of IAP, WHO & WCPT

SYLLABUS:-

MANAGEMENT

Introduction

Branches of management, nature and scope of management process

General principles of management

Theories of management, principles of health sector management, its application to physiotherapy

Personal management

Policies, procedures, basic concepts including performance appraisal

Planning and organization

Planning cycle, principles of organization charts, resource and quality management, planning change

Financial issues

Including budget and income generation

Hospital management

Hospital organization, staffing, information, communication and coordinator with other services of hospital, cost of services, monitoring and evaluation

Self management

Preparing for first job, time management, career development

Organization of physiotherapy department

planning, space, manpower and other basic resources

RECOMMENDED BOOKS:-

1. Hospital management, accounting, planning and control - Kulkarni GK
2. Principles and practice of management - Srinivasan R & Chunawalla SA
3. Hospital administration - CM Francis (2^{nd}Ed.)
4. Hospital planning and administration - Llewlyn
5. Human services management analysis and application - Welner EM
6. A guide for middle level management in primary health care - Rose Mary

ETHICS

1. Ethical principles in health care
2. Ethical principles related to physiotherapy
3. Scope of practice
4. Rules of professional conduct

- Physiotherapy as a profession
- Relationship with patients
- Relationship at health care institution i.e. hospital, clinic etc.
- Relationship with colleagues and peers
- Relationship with medical and other professionals

5. Confidentiality and responsibility
6. Malpractice and negligence
7. Provision of services and advertising
8. Sale of goods: personal and professional standards
9. Legal aspects: legal responsibility of physiotherapists for their action in the professional context understanding liability and obligations in case of medico legal action

- consumer protection act

RECOMMENDED BOOKS:-

1. Medical ethics - CM Francis
2. Current problems in medical ethics - M George, V Lobo
3. Consumer protection act - 1986 Govt. of India, New Delhi

ANNEXURE-7

Internship Criteria

For the Degree of Bachelor of Physiotherapy, the students after passing the professional examinations as per the syllabi prescribed by the Sardar Patel University, for First BPT, Second BPT, Third BPT and Final Year BPT shall undergo Six months compulsory rotatory paid (stipendiary allowances) internship training program to develop skill and acquire clinical knowledge with proficiency in managing patient independently.

The internship should be done in a SPU recognized institutes / organization / hospitals limited to Gujarat state. The program of internship shall be as under.

GENERAL:

Internship is a phase of training where a candidate is expected to conduct actual Physiotherapy practice, with fair independence in clinical decision making in low risk cases where as to work under supervision at high risk areas, so that at the end of Internship he/ she is capable to practice Physiotherapy independently.

The concerned college authority shall do the posting of the successful candidates for internship within 15 days of the declaration of results of Final BPT students.

It shall be binding on the candidate to follow strictly, the code of conduct prescribed by the IAP & accepted by the Sardar Patel University. Any breach in the conduct / discipline shall disqualify the candidate from pursuing Internship for a period of One week to One month or more depending upon the gravity of breach of conduct.

Stipend during the Internship: As may be determined by the colleges from time to time.

Compulsory Internship shall include rotational clinical assignments, administrative skills & a scientific project over a period of 26 weeks. The candidate is however encouraged to extend optional "Hands on" practice for six additional months in the desired areas at the hospital attached to the college affiliated to Sardar Patel University conducting BPT program; as per the rules & regulations applicable to

Internees regarding attendance, attitude & performance. Such clinical experience on successful completion & on passing shall be documented in the transcript & shall be strongly recommended for additional credits for higher education or employment.

On successful completion of Internship, to the satisfaction of the Head of Physiotherapy Dept and / or the Chief of the parent institution, the Internship completion certificate shall be issued by the parent institution; and it will be forwarded to the Sardar Patel University for the award of BPT Degree.

The University shall issue a provisional BPT pass certificate on completion of internship.

OBJECTIVES:

1. Detect and evaluate and arrive at appropriate physical and functional diagnosis.
2. Understand the rationale & basic investigative approach of the medical system & surgical intervention regimens & accordingly, plan & implement specific Physiotherapeutic measures effectively
3. Develop ability to prescribe, assess [fitting] & use of appropriate orthotic &prosthetic devices; in addition to an ability to fabricate simple splints for extremities, for the purpose of prevention, support & training for ambulation & activities of daily living.
4. Practice professional autonomy & ethical principle with referral as well as first contact client in conformity with ethical code for Physiotherapists.

SCHEDULE:

Candidate shall be posted to various Rotational Clinical assignments of total 26 weeks, including administrative skills pertaining to Physiotherapy practice & a scientific project of minimum total not less than 78 hours.

Schedule of Internship:

Assignment	Discipline	Duration
Musculo-Skeletal Physiotherapy	OPD/IPD -Orthopedics/Trauma Rheumatology/Sports injury	4 weeks
Hand rehab.- **Optional**	OPD/IPD	2 weeks
Neuro. Physiotherapy	OPD/IPD-Neurology (Medicine, Neurosurgery)	4 weeks
Paediatrics	OPD/IPD/NICU/PICU	2 weeks

EMG/NCS – **Optional** (Observation only)	EMG/NCS lab	2 weeks
Cardio-Pulmonary Physiotherapy	OPD/IPD	2 weeks
General Medical & Surgical Physiotherapy	Medical conditions/ Dermatology/Psychiatry Surgical/burns/plastic surgery/ reconstructive surgery	4 weeks
Intensive care Physiotherapy	Medical ICU/Surgical ICU Cardiac ICU	4 weeks
Women's health	OPD/IPD/Community	2 weeks
Geriatric health	OPD/IPD/Community	2 weeks
Community Physiotherapy+ Fitness unit	Primary health centre/ Community	2 weeks
Industrial health/ Disaster management - **Optional**	**-**	2 weeks

***** Clinical Posting in Community Physiotherapy can also be conducted at the Rural set up with prior permission from the HOD and the Principal of the parent institution.

Internees shall undertake a small research under the guidance of the senior faculty /HOD Physiotherapy department and the ethical committee of the parent institution. The candidate shall submit the project not earlier two weeks and not later than four weeks of last day of internship. The HOD Physiotherapy department shall sign on the same if the project is up to his/her satisfaction. After completing the project candidate shall present the project in front of all faculties/HOD.

EVALUATION:

The Candidate shall maintain a logbook and record of all events of the respective postings; he / she shall be closely monitored by a senior physiotherapy faculty and who shall also sign in the logbook on completion of assignment.

LEAVE FOR INTERNS:

An internee shall be entitled for maximum 6 days leave during six months period of internship posting. An internee will not be permitted to avail more than 2 days leave in any department. Period of leave in excess of 2 days in a department will have to be repeated in the same department. Under any circumstances this period will not

be condoned by any authority. In special circumstances this period may be condoned by HOD Physiotherapy department / Principal.

TRANSFER OF INTERNEE:

Transfer of Internee to other Physiotherapy college:

The student desirous of transfer to another Physiotherapy college for doing internship training program may apply to the University in the prescribed form along with the fee prescribed by the University from time to time.

(A) Colleges affiliated to Sardar Patel University:

1. All parts of internship will be necessarily done in the respected parent institute itself or/and in the institute/organization/hospitals affiliated/recognized by the SP University limited to Gujarat state as in the annexure-8.
2. Internee shall be permitted to complete all parts of internship at approved/ recognized Physiotherapy college which is attached to MCI recognized college /hospital.
3. Parent college shall grant NOC subject to the realization that the internship is done in a MCI recognized medical institute/hospital and similarly in recognized physiotherapy college which is attached to MCI recognized institute/ hospital listed in annexure.
4. The student will have to apply for No Objection Certificate to parent college and also where he/ she wants to get internship transferred.
5. The college in which the internee is transferred will have to complete the program as per the guidelines of Sardar Patel University.
6. The parent institution will then receive the Internship Completion Certificate from that college and will forward the same to Sardar Patel University for the award of degree.

(B) Colleges outside the jurisdiction of Sardar Patel University:

1. No Objection Certificate from both relieving and receiving colleges shall be obtained by the candidate.
2. NOC is automatically implied from the university for getting permission to allow internship completion at colleges/hospitals outside the jurisdiction of the university provided the hospital/college is listed in annexure.

3. The concerned college will issue Internship Attendance Certificate mentioning the quantum of work done department-wise as per proforma of Sardar Patel University and it will be submitted by the internee to parent college.

4. Internship completion certificate will be issued by the parent college and it will be forwarded to Sardar Patel University for award of degree.

INTERNSHIP COMPLETION CERTIFICATE:

Internee will be issued internship completion certificate by the Principal only after completion of internship training program satisfactorily.

ANNEXURE-8

List of recognized Hospitals as provided by SP University and few as approved by adhoc board of Physiotherapy, for permitting candidates to do their internship in part or full especially for the Physiotherapy colleges not associated with the medical college.

LIST OF RECOGNIZED INSTITUTES/ORGANIZATION/HOSPITALS

1. Civil Hospital, Ahmedabad
2. L.G. Hospital, Ahmedabad
3. KM Patel Institute of Physiotherapy, Karamsad
4. Vadilal (V.S.) Hospital, Ahmedabad.
5. Sola Hospital, Ahmedabad
6. Rajasthan Hospital, Ahmedabad
7. General Hospital, Surat
8. Lokhat Surat Hospital, Surat
9. Mahavir General Hospital, Surat
10. Civil Hospital, Surat
11. S.S.G. Hospital, Baroda
12. S.P. Sanatorium, Baroda
13. K.G.P. Hospital, Baroda
14. Civil Hospital, Rajkot
15. Physiotherapy College, Rajkot
16. Civil Hospital, Bhavnagar
17. C.U.Shah Medical College and Physiotherapy, Surendra nagar
18. Surendra Nagar Hospital, Surendra Nagar.
19. Sterling Hospital, Ahmedabad
20. Irwin Group of Hospital, Jamnagar
21. Sardaben Hospital, Ahmedbad
22. Jamnabai Hospital, Baroda
23. Jubilee Hospital, Bhuj

24. General Hospital, Bhuj
25. Bidada Sarvodaya Trust Hospital, Bidada
26. Hospital, Rajkot
27. Gandhinagar Civil Hosopital, Gandhinagar
28. Santram Physiotherapy, Nadiad
29. L.W. Hospital, Devgadh Bariya
30. I.P. Mission Hospital, Anand
31. Cottage Hospital, Dakor
32. J. B. Mehta Hospital, Kapadvanj
33. Civil Hospital, Mehsana
34. Municipal Medical Unit, Mahuva
35. Methodist Hospital, Nadiad
36. Civil Hospital, Rajpipla
37. Gulabbhai Hospital, Ahmedabad
38. Civil Hospital, Kheda
39. Steel Hospital, Chhota Udaipur
40. Emery Hospital, Anand
41. Civil Hospital, Palanpur
42. Civil Hospital, Surat
43. Civil Hospital, Bharuch
44. MGG Hospital, Navsari
45. Civil Hospital, Godhra
46. General Hospital, Visnagar
47. Civil Hospital, Himmatnagar
48. General Hospital, Patan
49. Sir T Hospital, Bhavnagar
50. KK Hospital, Savarkundla
51. General & CMZ Hospital, Junagadh
52. RR Hospital & B. Home, Limbdi
53. Bhav singhi Hospital, Porbandar
54. SS Hospital, Petlad
55. Victoria Jubilee Hospital, Ahmedabad
    (for Obst.& Gyn. only)
    (rename as sir CM Baronet General Hospital)
56. Dr. Rasiklal Shah Sarvajanik Hospital, Modasa
57. Smt. SCL General Hospital, Saraspur, Ahmedabad
58. Surendranagar TB Rohtmandal, Surendranagar
59. SFG General Hospital, Vatrak
60. Pravara Hospital, Pravnagar
61. DDMM Institute of Cardiology and Research Centre, Nadiad
62. Shram Mandir, Sindhrot, Baroda
63. Vadodara Institute of Neurology Science (VINS), Vadodara