

# **PADMASHREE DR. D. Y. PATIL UNIVERSITY**

*(established under Section-3 of UGC Act.1956 vide notification no. F. 9.21/2000.U.3  
dated 20.06.2002 of the Govt. of India)*



## **SYLLABUS**

### **BACHELOR OF PHYSIOTHERAPY**

### **(B.P.T.) DEGREE COURSE**

*Academic year 2007-08 and Progressively*

Department of Physiotherapy  
Pad. Dr. D. Y. Patil University

---

Sector- 7 Dr. D.Y. Patil Vidyanagar, Nerul, Navi Mumbai.  
Tel: 91-22-30965999 Fax: 91-22-30965660 [www.dypatil.ac.in](http://www.dypatil.ac.in)

***SYLLABUS***  
***BACHELOR OF PHYSIOTHERAPY***  
***(B.P.T) DEGREE COURSE***

*2006-07 AND PROGRESSIVELY*

# **CONTENTS**

## **Vision, Mission and Goals**

### **1. Introduction**

- a. Padmashree Dr. D.Y.Patil University**
- b. Dr. D.Y.Patil Institute of Physiotherapy**

### **2. Aims and Objectives of BPT Degree Course**

### **3. Regulations relating to Bachelor of Physiotherapy (B.P.T.) Degree Course.**

### **4. Syllabus and Scheme of Examination**

## **Vision, Mission & Goals of the University**

### **Vision**

**To** provide quality in all spheres of higher learning in general and Health Services in particular to all including those in the rural and urban areas of the nation, keeping in view the societal needs in the global context.

### **Mission**

**To** impart and disseminate knowledge, develop competencies and also to provide for Research and Development in the emerging areas of Health Sciences, Science and Technology, Business Management, Hospitality Management, Law, Liberal Education, Teacher's Education, Sports etc.

### **Goals**

**To** be recognized as one of the leading institutes of higher learning in India within the next 5 years and gain recognition in the global arena.

## **INTRODUCTION**

### **a) PADMASHREE DR. D.Y. PATIL UNIVERSITY:**

Visualizing the power of quality as early in the 1980's, Padmashree Dr. D.Y. Patil started providing facilities for higher education for the young talented students over the years. The D.Y. Patil Group with its commitment and dedication has earned a reputation of being a provider of quality education in particular in areas of professional significance. It has 150 educational institutions from the Pre-primary stage to Post Graduate stage located in Mumbai, Navi Mumbai, Pune and Kolhapur catering to the educational needs of aspiring boys and girls.

In the Medical and Dental education, Dr. D.Y.Patil Medical College and Dr. D.Y.Patil Dental College & Hospital, Navi Mumbai, have been providing quality education since 1990's. Recognizing this, on the recommendations of the University Grants Commission the Government of India has declared these two colleges of Padmashree Dr. D.Y.Patil as a Deemed to be University. This has provided a boost to these two colleges in general and the teachers and students in particular to make the University a world-class university in medical and dental education.

Within a span of three years the University has brought under its ambit the following institutions:

1. Dr. D. Y. Patil College of Ayurved & Research Institute
2. Dr. D. Y. Patil Institute of Physiotherapy
3. Dr. D. Y. Patil Institute for Biotechnology & Bioinformatics
4. Dr. D. Y. Patil Institute of Management Studies
5. Dr. D. Y. Patil College of Education & Research
6. Dr.D.Y.Patil Institute of Hotel Management & Catering Technology

The Association of Indian Universities has also accepted this University as its member.

The students benefit from the experience of quality teachers and the excellent infrastructure that they are provided with to help them realize their dreams of becoming competent professionals who can contribute to cause of national development.

The degrees and diplomas awarded by this University have the same status and recognition as those awarded by any Indian University recognized by the University Grants Commission, New Delhi. This University operates its educational programmes in accordance with the norms, regulations and guidelines laid down by the various statutory Central Government Bodies - Medical Council of India, Dental Council of India, Central Council of Indian Medicines and All India Council of Technical Education, New Delhi etc.

## **b) DEPARTMENT OF PHYSIOTHERAPY, PADMASHREE.DR.D.Y.PATIL UNIVERSITY.**

Physiotherapy plays an important role in rehabilitating patient to his or her predisease status. It is said that a physician adds years to life while a Physiotherapist adds life to years.

During the course of four years, the programme provides an educational experience of the essentials required for the health care in the country. The educational process involves problems based learning, which enables the students to identify, discuss and analyze various dysfunctions incorporating institutional management as well as community based rehabilitation. The learning process is further strengthened during 6 months of mandatory, rotatory internship programme where students learn to treat the patients under the guidance and supervision of competent teachers.

The college and physiotherapy O.P.D. are very well equipped with modern and advanced Electrotherapeutic and Exercise therapeutic equipments. There is also an advanced Electrophysiology and Exercise physiology laboratory for Electro Diagnosis and Fitness programme respectively. The faculty comprises of well qualified, competent, enthusiastic teachers. Students learn basis sciences in first two years and implementation of the same on patients in third and final year. Faculty helps the students to understand functional diagnosis and management of the patient, aimed at learning structural and functional impairments, activity limitation and participation restriction with particular emphasis given on clinical reasoning. There is good intra and inter faculty interaction and various integrated programmes are held to bring about a good learning experience.

***The syllabus of B.P.T. has been developed under the supervision of Prof. Mrs. Sujata Yardi, Dean & Chairperson of the Physiotherapy Pre & Para Clinical Board of Studies & Clinical Boards of Studies, in consultation with the faculty and concerned Heads of the Departments and further scrutinized by the academic section.***

## **2. AIMS AND OBJECTIVES OF B.P.T DEGREE COURSE**

- 2.1 On completion of the course of study having successfully passed the examination, the candidate would be able to achieve a satisfactory level of efficiency:-
- i. To Detect and evaluate the anatomical, patho-physiological impairments, resulting in dysfunction of various age groups & occupation; as well as epidemiological sectors in the population & arrive at appropriate diagnosis.
  - ii. To understand the rationale & basic investigative approach to the medical system and surgical intervention regimens & accordingly plan & implement specific Physio-Therapy measures effectively.
  - iii. To be able to select strategies for cure and care; adopt restorative & rehabilitative measures for maximum possible independence of a client at home, work place & in the community.
  - iv. To maintain healthy relationship & Co-partnership with various professionals in the health delivery system in the primary interest of a client.
  - v. To ensure quality assurance & motivate the client & her/his family for a desirable client compliance.
  - vi. To develop communication skills for the purpose of transfer of suitable technique to be used creatively at various stages of treatment, compatible with psychological status of the beneficiary.
  - vii. To promote health in general in Geriatrics, Women's health, Industrial medicine as well as at competitive level, such as sports, keeping in mind National Health Policies.
  - viii. To practice professional autonomy & ethical principles with referral as well as first contact clients in conformity with ethical code for physiotherapists.

### **3. REGULATIONS RELATING TO BACHELOR OF PHYSIOTHERAPY ( B.P.T) DEGREE COURSE**

#### **3.1 PREAMBLE:**

- 3.1.1 This syllabus is framed under the provision of Rule 26 (C) of the MOA 2003 of the University.
- 3.1.2 The Bachelor of Physiotherapy programme shall be under the Faculty of Physiotherapy.
- 3.1.3 The name of the Degree programme shall be Bachelor of Physiotherapy (B.P.T)

#### **3.2 ELIGIBILITY:**

- 3.2.1 The candidate must be either of 17 years of age or attain this age at the time of admission. Candidate should have passed H.S.C. (10+2) or equivalent examination from a recognized Board with Physics, Chemistry and Biology as mandatory subjects, preferably with minimum 50% marks in PCB. Candidate should have secured minimum of 50% marks in Physics, Chemistry and Biology taken together at the competitive entrance examination of this university.
- 3.2.2 All the backward class (Scheduled caste and Scheduled tribe) students shall have relaxation of 10% in the aggregate marks required for eligibility.

#### **3.3 MIGRATION/TRANSFER OF CANDIDATES:**

- 3.3.1 Students studying in the Physiotherapy College of this University may be allowed to migrate or transfer to a Dental College of another University provided a similar curriculum is followed by the two Universities. The migration/transfer will not be entertained in the middle of academic year.

#### **3.4. DURATION OF THE COURSE:**

- 3.4.1 Duration of the BPT course will be four calendar years followed by compulsory six months Rotatory Internship.

#### **3.5. PROCEDURE OF SELECTION:**

- 3.5.1 Candidates who secure the minimum 50 % marks at AIET i.e. All India Entrance Test conducted by the University shall be eligible for admission to BPT course.

### **3.6. PHYSIOTHERAPY CURRICULUM:**

- 3.6.1 The aim and objectives of the B.P.T curriculum is to educate and train a student as a qualified Physiotherapist who will be able to impart health services safely and effectively to community in terms of health promotion, functional diagnosis, prevention and treatment of dysfunction in different fields of medical science.
- 3.6.2 The teaching and training programme shall be evolving one and there shall be more emphasis on demonstration, clinical work, seminars and group discussion than on classroom teaching. The student shall have clinical experience in different fields like Orthopedics, Neurology, Chest and Cardiac conditions, Paediatrics and Surgery. Students shall visit and work at community centers like primary health centers, geriatric homes, paraplegic homes, orphanages, NASEOH etc. as a part of training for community rehabilitation.
- 3.6.3 The progress of the student shall be monitored through the seasonal examinations. A record of student's work shall be maintained which would form the base for internal assessment. The students shall be encouraged to do clinical presentations, to participate in group discussions and seminars, to prepare community related projects to enable them to develop personality, expression and acquire depth of knowledge.

### **3.7. REGULATIONS AND SCHEME OF EXAMINATION (BPT COURSE):**

- 3.7.1 The scheme of examination for the B.P.T. course shall be divided into 4 professional examinations, namely, I<sup>st</sup> B.P.T. examination at the end of 1<sup>st</sup> academic year, II<sup>nd</sup> at the end of 2<sup>nd</sup> academic year, III<sup>rd</sup> at the end of 3<sup>rd</sup> academic year and IV<sup>th</sup> and final B.P.T examination at the end of 4<sup>th</sup> academic year.
- 3.7.2 The examination shall be open to a candidate who satisfies the requirement of attendance, progress and conduct as stipulated by the University.
- 3.7.3 Certificate to the above effect be procured from the Head of the Institute by the candidate along with the application for examination and the prescribed fee. Examination shall be held twice in a year. There will be 2 tests in each year (class) and 20% of the total marks in each subject's theory and practical / clinical individually will be assigned to these tests.

### **3.8. RULES FOR A.T.K.T (ALLOW TO KEEP TERMS) SHOULD READ AS:**

- 3.8.1 A candidate who has passed in all the subjects but two (maximum) at the I<sup>st</sup> B.P.T. examination shall be allowed to keep terms for II<sup>nd</sup> B.P.T. first term only, but the candidate shall not be permitted to keep II<sup>nd</sup> B.P.T. 2<sup>nd</sup> term and to appear at II<sup>nd</sup> B.P.T. examination unless such candidate passes Ist B.P.T. examination completely, one clear academic term prior to appearing for the II<sup>nd</sup> B.P.T. examination and only after keeping required terms of II<sup>nd</sup> B.P.T.
- 3.8.2 A candidate who has passed in all the subjects but two (maximum) at the II<sup>nd</sup> B.P.T. examination shall be allowed to keep terms for III<sup>rd</sup> B.P.T. first term only, but the candidate shall not be permitted to keep 3<sup>rd</sup> B.P.T II<sup>nd</sup> term and to appear at III<sup>rd</sup> B.P.T examination unless such candidate passes IInd B.P.T. examination completely, one clear academic term prior to appearing for the III<sup>rd</sup> B.P.T.examination & only after keeping required terms of III<sup>rd</sup> B.P.T.
- 3.8.3 A candidate who has passed in all the subjects but two (maximum) at the III<sup>rd</sup> B.P.T. examination shall be allowed to keep terms for IV<sup>th</sup> B.P.T. first term only, but the candidate

shall not be permitted to keep IV<sup>th</sup> B.P.T II<sup>nd</sup> term and to appear at IV<sup>th</sup> B.P.T examination unless such candidate passes III<sup>rd</sup> B.P.T. examination completely, one clear academic term prior to appearing for the IV<sup>th</sup> B.P.T.examination & only after keeping required terms of IV<sup>th</sup> B.P.T.

### **3.9. MAXIMUM MARKS IN EXAMINATION:**

3.9.1 Subject-wise marks are mentioned in the syllabus.

For passing the examination, the candidate must secure a minimum of 50% marks of total marks each in theory and practical, i.e. 50% marks in the aggregate of University examination and internal assessment of theory and practical/ Clinical separately.

### **3.10. DURATION OF EXAMINATION:**

3.10.1 Each written paper of 80 marks shall be of 3 hours duration and of 40 marks shall be of 2 hours duration.

### **3.11. ATTENDANCE:**

3.11.1 75% in theory and 75% in practical/clinical in each subject in each year.

### **3.12. FIELD PROGRAMME IN COMMUNITY PHYSIOTHERAPY:**

There shall be participation of students in health camps and projects in final year and during internship with a view to expose the students to problems of rural and semi urban areas.

# SYLLABUS

## 4. TITLES OF SUBJECTS OF STUDY

### **First Year**

- i) Introduction to Physiotherapy
- ii) Anatomy
- ii) Physiology
- iii) Biochemistry
- iv) Fundamentals Exercise Therapy
- v) Fundamentals of Electro Therapy
- vi) Supervised clinical practice

### **Second Year**

- i) Pathology
- ii) Microbiology
- iii) Pharmacology
- iv) Kinesio Therapeutics
- v) Electrical agents
- vi) Psychology
- vii) Supervised Clinical practice

### **Third Year**

- i) Surgery
  - General Surgery
  - Orthopedics
- ii) Medicine
  - Cardio-vascular & pulmonary Medicine
  - Neurology
  - General Medicine, Rheumatology & Gerontology
- iii) Paediatrics
- iv) Dermatology
- v) Physical Diagnosis & Therapeutic skills
- vi) Psychiatry
- vii) Obstetrics and Gynecology
- viii) Community Health/Sociology & Biostatistics
  - Section-I-Community health
  - Section-II-Biostatistics
  - Section-III- Sociology
- ix) Supervised Clinical practice

#### **Fourth Year**

- i) Physiotherapy in Musculoskeletal conditions
- ii) P.T. in Neuro-Sciences [including Adult/ Paediatric/Psycho-somatic & Psychiatric conditions]
- iii) P.T. in Cardiopulmonary & Integumentary conditions --
- iv) P.T. in Community Health [including Womens Health / Geriatrics / Industrial Health [Ergonomics] & Health promotion
- v) Principles of Bio-engineering
- vi) Professional issues / Administration/Management-/Marketings
- vii) Supervised clinical practice + Project

# **PADMASHREE DR.D.Y.PATIL UNIVERSITY**

## **COURSE - PHYSIOTHERAPY** **DEGREE CONFERRED – B.P.T.**

### **I - B.P.T.**

**[Applicable to the batches admitted from the year 2004-2005]**

#### **I B.P.T.**

*Subjects—*

1] Introduction to Physiotherapy-----	10 hrs
2] Anatomy-----	250 hrs
3] Physiology-----	200 hrs
4] Biochemistry- -----	40 hrs
*5] Fundamentals Exercise Therapy-----	280 hrs
*6] Fundamentals of Electro Therapy---	220 hrs
8] Seminar -----	40 hrs
9] Supervised clinical practice-----	360 hrs
Total Transcript hrs -----	1400 hrs

\* [Clinical assignments should include Observation, Clinical History taking & technical assistance to the senior clinical staff of the Therapeutic Gymnasium (Fundamentals of Exercise therapy) & Electro Therapy sections at the O.P.D set up. The student should maintain a Journal/File in which documentation of minimum 15 case histories to be included. The student should get all the documents duly signed by the section In-Charge with his/her assessment remarks at the end of each respective assignment.]

## INTRODUCTION TO PHYSIO THERAPY -----[10 hrs]

**Objective-** By the end of the 10 hours of introduction, the candidate will-

- 1] Acquire the geographical orientation of the various concerned sections of the college & the clinical training areas
- 2] Get the overall idea about the graduate program & its scope in the professional practice
- 3] Learn the Bed-side manners, General Ethical code & discipline of the Department
- 4] Acquire the skill of History taking in general

## **HUMAN ANATOMY**

Didactic	- 100 Hrs
Practical/Laboratory	- 150 Hrs
Total	<hr/> - 250 Hrs <hr/>

### **Goals:**

To provide the student with the necessary Anatomical knowledge & skills to practice as a qualified Physiotherapist

### **Objectives:**

#### 1] MUSCULO- SKELETAL-

- i] The student should be able to identify & describe anatomical aspects of muscles, bones & joints & to understand and analyze movements
- ii] To understand the anatomical basis of various clinical conditions e.g. trauma, deformities pertaining to limbs & spine.
- iii] To be able to localize various surface landmarks
- iv] To understand & describe the mechanism of posture & gait & the anatomical basis of abnormal gait.

#### 2] NEURO-Anatomy-

- i] to identify & describe various parts of C.N.S.-Forebrain, Midbrain, Hind-brain, Brain-stem, courses of cranial nerves; functional components, course distribution, anatomical basis of clinical lesions, Ventricular system and CSF circulation.
- ii] to describe the source & course of spinal tracts
- iii] to describe blood circulation of C.N.S.& spine

#### 3] THORAX-to identify & describe various components of the contents of the Thorax- with special emphasis to cardio- vascular system & Respiratory system.

4] CIRCULATORY- be able to identify & describe the source & course of major arterial, venous & lymphatic system, with special emphasis to extremities, Spine & Thorax

## Syllabus

### I. GENERAL ANATOMY:

1. Introduction to the subject, Subdivisions of anatomy, Anatomical position, Descriptive terms
2. Osteology- Definition of bone, Classification, ossification, epiphysis  
Functions, Blood supply & applied anatomy
3. General Arthrology, Definition, Classification, Body lever system, Applied anatomy
4. General Myology, Definition, Classification- morphological, functional, Innervations, Swing, shunt & spin component of muscles, Applied Anatomy
5. Integumentary system, Skin & its appendages, flexion creases, Langer's lines, Superficial and Deep Fascia, Tendons, Ligaments, aponeuroses, bursae:-communicating, non-communicating, adventitious etc.

### II. REGIONAL ANATOMY:

#### a. Upper Limb

Bones: Scapula, Clavicle, Humerus, Radius, Ulna, Articulated hand,

Fascia, Muscles, Vessels, Nerves, Lymphatics

Shoulder region, Axilla, Arm, Cubital fossa, Forearm, Hand, Joints of the upper limb,

Applied Anatomy of - Erb's and Klumpke's paralysis, wrist drop, carpal tunnel, claw hand, Winging of scapula.

#### b. Lower Limb:

Bones – Hip, femur, Tibia, Fibula, Patella, Articulated foot,

Fascia, Muscles, Vessels, nerves & Lymphatics, Thigh and Gluteal Region, Popliteal Fossa, Leg, Foot, Joints of lower limb,

Applied anatomy of- Femoral sheath, femoral canal, Sciatic nerve, Foot drop, varicose veins, Hip joint, Knee joint, arches of Foot.

#### c. Thorax:

Thoracic Wall: Bones: Ribs, Sternum, Thoracic Vertebrae, Joints,

Muscles, Nerves, Blood, Vessels, Lymphatics, thoracic cavity, intercostal spaces, Movements of Respiration, Mediastinum-Boundaries & contents, Pleura & Lungs, Pericardium, Heart & Great Vessels, Diaphragm, Azygous vein, Oesophagus, Trachea. Thoracic duct

d. **Abdomen:**

Bones: Lumbar vertebrae, Pelvis (Male & Female), Sacrum, Joints  
Anterior abdominal wall, Rectus sheath, external genitalia, Inguinal canal. Organs- stomach, small intestine, large intestine, liver, pancreas, spleen, urinary system, reproductive system- male, female.  
Perineum: Male, Female, Anatomy of family planning.

e. **Back:**

Vertebral column, Curvatures, Movements, Muscles of Back,  
Thoracolumbar Fascia, Spinal cord & Meninges – (Tracts, Blood supply),  
Posture & Gait, line of gravity, centre of gravity.  
Applied anatomy- abnormal curvatures, P.I.D., lumbar puncture.

f. **Head, Face & Neck:**

Articulated skull & mandible, Cervical vertebrae, Foetal skull, Joints  
Scalp, Face, Oral Cavity, Tongue & Teeth, Tonsil, Nasal cavity & Paranasal sinuses, Ear.  
Fascia of neck, muscles of neck, cranial cavity, Dural venous sinuses, meninges, cranial nerves, muscles of mastication.

Thyroid, Parotid, submandibular gland, Larynx, pharynx,  
palate, Trachea, Oesophagus,

g. **Brain**

Meninges, Cerebrum, Cerebellum, Brainstem, Motor and sensory tracts including optic, Auditory, Gustatory pathways, Ventricular system of brain and CSF, Blood supply. Applied anatomy of – Hemiplegia, Internal capsule, Medial and Lateral medullary syndromes.

**III. EMBRYOLOGY:**

**General :** Early embryogenesis, Development of nervous system

**IV. HISTOLOGY**

Microscope

**General Histology**

1. Cytology
2. Basic Tissues : A. Epithelia including Glandular epithelium  
Connective tissue including cartilage &  
bone

- C. Muscular tissue
- D. Nervous tissue
- 3. Blood vessels
- 4. Lymphoid tissue – Lymph node, spleen, Thymus, Tonsil
- 5. Skin & its appendages

### **Systemic Histology**

- 1. Respiratory system –Trachea, lung.
- 2. Nervous system
  - Spinal cord – i) Cervical
  - ii) Thoracic
  - iii) Lumbar
  - Cerebrum, Cerebellum

## **V. GENETICS**

- I. Introduction to human genetics – mitosis, meiosis ,Mendel’s laws,
- II. Cytogenetics - karyotype , karyotyping , Barr-body.
- III. Modes of Inheritance – Autosomal dominant and recessive, Y- linked inheritance, X-linked dominant and recessive, pedigree charting
- IV. Medical Genetics: Chromosomal aberrations, -
  - Structural: Deletion, duplication, translocation etc.,
  - Numerical: Down, Turner, Klinefelter syndromes
- V. Clinical Genetics: Prenatal diagnosis, Genetic Counselling.

## **VI RADIOLOGICAL ANATOMY**

### **1) Introduction**

Principles of radiography, identification of gross anatomical features in plain radiographs.

### **2) Radiographs of :**

#### **i) Upper Limb**

Shoulder region  
Elbow region  
Wrist and hand

#### **iii) Abdomen**

Plain Radiograph, AP, Lat.

#### **ii) Lower Limb**

Hip region  
Knee region  
Ankle region, Foot

#### **iv) Thorax**

Plain Radiograph: male, female

**v) Head, Face & Neck**

Plain Radiograph skull, AP, Lat.

Plain Radiograph Neck, AP,

**VII LIVING ANATOMY**

**i) Upper Limb**

Bony Landmarks(PALPATION OF): Clavicle; Spine, Inferior angle, Coracoid process of scapula, Epicondyles of humerus, Olecranon process of ulna; Head and styloid processes of radius and ulna, Heads of metacarpals (knuckles), Pisiform, Hook of Hamate

Joints (DEMONSTRATION OF MOVEMENTS): Shoulder girdle, Shoulder joint, Elbow joint, Radio-ulnar joints, Wrist joint, 1st carpo-metacarpal joint, MP and IP joint

Muscles (DEMONSTRATION OF ACTION): Principle of testing: Trapezius, Serratus anterior, Latissimus dorsi, Pectoralis major, Deltoid, Biceps Brachii, Brachioradialis, Brachialis, Extensors at the elbow, Supinators, Wrist extensors, Wrist flexors, Small muscles of the hand

Nerves: Dermatomes.

Ulnar nerve thickening in Leprosy

Vessels (PALPATION OF): Axillary artery, Brachial artery, Radial artery

Others: Axillary groups of lymph nodes; Anatomical snuff-box (boundaries)

**ii) Lower Limb**

Bony Landmarks (PALPATION OF): Anterior superior iliac spine, Iliac crest, tubercle of the iliac crest, Ischial tuberosity, Greater trochanter, Adductor tubercle, Head and neck of fibula, Lateral and medial malleoli, Tibial tuberosity, Subcutaneous surface of tibia, Patella

Joints (DEMONSTRATION OF MOVEMENTS): Hip , Knee , Ankle , Subtalar Joints

Muscles (DEMONSTRATION OF ACTION): Principles of testing-sartorius, quadriceps femoris, psoas major, Gluteus maximus gluteus medius, hamstring muscles, Gastrocnemius, soleus, popliteus, tibialis-anterior, tibialis posterior, peroneus longus & peroneus brevis Hip-Flexors, Extensors, Abductors, Adductors; Knee - Flexors, Extensors; Ankle - Dorsiflexors, Plantar flexors; Subtalar - Invertors, Evertors

Nerves: Dermatomes, Thickening of common peroneal nerve in Leprosy

Vessels (PALPATION OF): Femoral, Popliteal, Dorsalis pedis, Posterior tibial

Others: Ligamentum patellae, Inguinal lymph nodes

Tendons: Semitendinosus, Semimembranosus, Biceps femoris, Iliotibial tract

### **iii) Abdomen**

Bony Landmarks (PALPATION OF): Anterior superior iliac spine, Pubic tubercle

Joints (DEMONSTRATION OF MOVEMENTS): Intervertebral

Nerves: Dermatomes

### **iv) Thorax**

Bony Landmarks (PALPATION OF): Sternal angle, Counting of ribs, Inter costal spaces, locating thoracic spines

Joints (DEMONSTRATION OF MOVEMENTS): Intervertebral

Others: Apex beat, Apices of the lungs, Triangle of auscultation

### **v) Head, Face, Neck**

Bony Landmarks (PALPATION OF): Nasion, Glabella, Inion, Mastoid process, Suprameatal triangle, Zygoma, Zygomatic arch, Angle of mandible, Head of mandible, Symphysis menti, Hyoid bone, Thyroid cartilage, Cricoid cartilage, Tracheal rings, Suprasternal notch, Transverse process of atlas, Spine of C7

Joints (DEMONSTRATION OF MOVEMENTS): Temporomandibular joint, Atlanto-occipital joint, Cervical joints

Muscles (DEMONSTRATION OF ACTION): Of Mastication, Face, Sternocleidomastoid, Neck flexors and extensors

Cranial nerves : testing of oculomotor, trochlear, trigeminal, abducent, facial, glossopharyngeal, accessory, hypoglossal.

Others: Thyroid gland, Cervical lymph nodes, (Horizontal and vertical), Midline structures in the neck.

### **Textbooks:**

Gross Anatomy (Any One):

- 1) Human anatomy for physiotherapy students by I.B. Singh.
- 2) Human Anatomy B.D. Chaurasia Vol. I, II, III

General Anatomy (Any One):

- 1) Essentials of General Anatomy by Sushil Kumar

- 2) Handbook of General Anatomy by B.D. Chaurasia 3<sup>rd</sup> ed.  
CBS publishers & Distributors, 1996.
- 3) Principles of General Anatomy by A.K. Datta 5<sup>th</sup> ed.  
Current books International, 2000

Microanatomy (Any One):

- 1) Text book of Human Histology with colour Atlas.  
Inderbir Singh 4<sup>th</sup> ed. Jaypee, 2002.
- 2) Histology by Krishna Garg

Neuroanatomy:

- 1) Text book of Human Neuroanatomy by Inderbir Singh 6<sup>th</sup> ed. Jaypee, 2002.
- 2) Clinical Neuroanatomy for medical students by Vishram Singh

Genetics (Any One)

- 1) Essentials of Human Embryology by Bhatnagar, Kothari,  
Mehta, 5<sup>th</sup> ed. Orient Longman Ltd. 1999
- 2) Human Genetics by S.D. Gangane, 2<sup>nd</sup> ed. Elsevier, 2000

SAQ's:

SAQs in Anatomy – V.G. Sawant , 2<sup>nd</sup> Edition, Jaypee brothers.

**Reference Books:**

Gross Anatomy:

- 1) Clinical Anatomy for students by Neeta Kulkarni.
- 2) Clinically oriented Anatomy by K.L.Moore 4<sup>th</sup> ed. LWW. 1999
- 3) Clinical Anatomy for Medical students by Richard Snell, 7<sup>th</sup> ed. LWW, 2003
- 4) Gray's Anatomy by Williams, 39<sup>th</sup> ed. IA Elsevier, 2005

Microanatomy:

Di Fiore's Atlas of Human Histology with functional correlation  
Victor P. Croschenko 9<sup>th</sup> ed. LWW, 2000

Neuroanatomy

Clinical Neuroanatomy for Medical students by Richard Snell 5<sup>th</sup> ed. LWW, 2001

M.C.Q's:

- 1) Prevalidated MCQs in Anatomy along with practice sheets,  
Bhuiyan, Rajgopal, Shyam Kishore  
Bhalani Medical Book House, 2001
- 2) J.S.P. Lumbley et al – M.C.Q.'s in Anatomy

Medical Dictionary:

- 1) Dorland's illustrated medical dictionary, 29<sup>th</sup> ed. Elsevier 2001.
- 2) Understanding Anatomical Terms by Mehta, Natarajan, Kothari.  
Bhalani Medical Book House, 2<sup>nd</sup> ed. 2004

## **SCHEME OF EXAMINATION**

**Student should get minimum 50% marks for passing the examination**

Theory- 80 Marks  
Int.assessment-20 marks  
Total-100 Marks

### **Model question paper-**

Section A)

M.C.Q.-based on Single best response – [20 x 1 ]                      20marks[20 minutes]

Section B)

S.A.Q.- Q.1) Answer any Five out of Six [3 X 5]                                      15marks

Based on

- a) Upper limb
- b) Lower limb
- c) Genetics
- d) Systems ( Urogenital, Digestive, Endocrine)
- e) Systems ( Urogenital, Digestive, Endocrine)
- f) Histology

Q.2) Answer any 3 out of 4 [5 X 3]

15 marks

Based on

- a) Respiratory system & Cardiovascular system
- b) General Anatomy
- c) Head / Face / Neck
- d) Brain

Section C)

#-L.A.Q- Q.No.3 - based on Musculo Skeletal system

Upper limb/ Lower limb 15 marks

Q. No.4 - based on Neuro Anatomy 15 marks

**OR**

Q. No.4 - based on Neuro Anatomy 15 marks

#- Each LAQ should give break up of 15 marks-e.g.-[3 + 5 + 7 ] etc

Practical	80 Marks
Internal assessment	20 marks
	<b>TOTAL-100 Marks</b>

Should include 1] Spots 60 marks ( 12 x 5)  
Based on i) 3 bones  
ii) 3 organs (GIT, RS, CVS, Urogenital)  
iii) 1- Head, Face, Neck  
iv) 2- Brain, , Soft  
v) 1 Superior extremity (Soft part)  
vi) 1 Inferior extremity (Soft part)  
vii) Radiology & Histology

2] Viva 15 marks – 8 Soft parts  
7 Hard parts

3] Journal 05 Marks

**INTERNAL ASSESSMENT -**

One Terminal & one Prelim having 80 marks each in theory & practical.  
I.A. marks out of 20 for theory & 20 for practical.

**Student will be eligible to appear for University examination if he/ she gets Minimum 35% marks.**

## **HUMAN PHYSIOLOGY**

<b>Didactic</b>	<b>-140 Hrs</b>
<b>Practical /Laboratory</b>	<b>- 60 Hrs</b>
<b>Total</b>	<b>- 200 Hrs</b>

**Objectives-**At the end of the course, the candidate will-

- 1] Acquire the knowledge of the relative contribution of each organ system in maintenance of the milieu interior [Homeostasis]
- 2] Be able to describe physiological functions of various systems with special reference to Musculoskeletal, Neuro-motor, Cardio-respiratory, Female uro-genital function, & Alterations in function with aging
- 3] Analyse physiological responses & adaptation to environmental stresses-with special emphasis on physical activity, temperature
- 4] Acquire the skill of basic clinical examination, with special emphasis to Peripheral & Central Nervous system, Cardiovascular & Respiratory system, & Exercise tolerance/Ergography.

### **Syllabus-**

#### **1] GENERAL Physiology**

[only short notes] 2 hrs  
Transport through Cell Membrane, Homeostasis, Resting Membrane Potential (RMP)

#### **2] BLOOD-Rh-A B O system & mismatch, transfusion [composition & function]**

Plasma Proteins, RBCs, WBCs, Platelets & their functions, Coagulation 6 hrs

#### **3] Nerve** 7 hrs

- i] Structure, classification & properties ii]-R.M.P. iii] Action potential
- iv] Propagation of nerve impulse v] Degeneration & Regeneration
- vi] Reaction of degeneration

#### **4] Muscle** 9 hrs

- i] Structure, properties, classification, excitation/contraction coupling
- ii] Motor unit-E.M.G, factors affecting muscle tension
- iii] Neuro-muscular transmission

#### **5] Nervous System** 33 hrs

<ul style="list-style-type: none"> <li>i] Receptor physiology-classification &amp; properties</li> <li>ii] Synapse-structure, properties &amp; transmission</li> <li>iii] Reflexes –classification &amp; properties</li> <li>iv] Sensory &amp; Motor Tracts-effect of transection [complete &amp; incomplete] at various levels</li> <li>v] Physiology of Touch, Pain, Temperature &amp; Proprioception</li> <li>vi] Physiology of Muscle Tone [muscle spindle ]</li> <li>vii] Labyrinth</li> <li>viii] Function of Basal Ganglia, Thalamus, Hypo-Thalamus, Pre-frontal lobe, Reticular Activating System, Cerebellum</li> <li>ix] Sensory /motor cortex</li> <li>x] Limbic system</li> <li>xi] Learning, memory &amp; condition reflex</li> <li>xii] Physiology of Voluntary movement</li> <li>xiii] A.N.S - Sympathetic/parasympathetic system-adrenal medulla-functions- Neuro Transmitters— role in the function of pelvic floor-[micturation, defecation, labour]</li> </ul>	3 hrs
<b>6] Excretory System</b> <ul style="list-style-type: none"> <li>i] Kidneys [short note] structure &amp; function</li> <li>ii] Urine formation</li> <li>iii] Micturition –neural control, neurogenic bladder</li> <li>iv) Renal circulation</li> </ul>	7 hrs
<b>7] Temperature Regulation</b> <ul style="list-style-type: none"> <li>I] circulation of the skin, body fluid, electrolyte balance, Role of hypothalamus in temperature regulation</li> </ul>	3 Hrs
<b>8] Endocrine System</b> <ul style="list-style-type: none"> <li>I] Secretion- regulation &amp; function of Pituitary, thyroid, adrenal, parathyroid, pancreas</li> </ul>	7 hrs
<b>9] Reproductive System</b> <ul style="list-style-type: none"> <li>i] Female – Menstrual cycle &amp; related hormones, Functions of Estrogen, Progesterone &amp; Testosterone</li> <li>ii] Puberty &amp; Menopause</li> <li>iii] Male Spermatogenesis and functions of Testosterone</li> </ul>	5 hrs
<b>10] Special Senses</b> <ul style="list-style-type: none"> <li>i] Eye-Errors of refraction-accommodation-reflexes-dark &amp; light adaptation- photosensitivity</li> <li>ii] Ear – structure &amp; function</li> <li>iii] Vestibular Apparatus</li> </ul>	6 hrs
<b>11] Respiratory system</b> <ul style="list-style-type: none"> <li>i] Introduction, general organization</li> <li>ii] Mechanics of respiration</li> <li>iii] Pulmonary Volumes &amp; capacities</li> <li>iv] Anatomical &amp; physiological Dead space, ventilation/perfusion ratio, alveolar ventilation</li> <li>v] Transport of respiratory gases</li> <li>vi] Nervous &amp; Chemical control of respiration</li> </ul>	20 hrs

- vii] Pulmonary function tests-Direct & indirect method of measurement
- viii] Physiological changes with altitude & acclimatization
- ix] Pulmonary circulation

## **12] Cardio-Vascular System**

20 hrs

- i] Structure & properties of cardiac muscle
- ii] Cardiac cycle
- iii] Heart rate regulation- factors affecting
- iv] Blood pressure –definition, regulation, factors affecting
- v] Cardiac output- regulation & factors affecting
- vi] Peripheral resistance, venous return
- vii] Regional circulation-coronary- muscular, cerebral
- viii] Normal ECG.
- ix] Circulatory Shock

## **13] Exercise Physiology**

10 hrs

- i] Effects of acute & chronic exercises
- ii] Oxygen /CO<sub>2</sub> transport-O<sub>2</sub> debt
- iii] Effects of exercise on muscle strength, power, endurance, B.M.R., Respiratory quotient, hormonal & metabolic effects-respiratory & cardiac conditioning-
- iv] Aging
- v] Training-fatigue & recovery
- vi] Fitness-related to age, gender & body type

## **14] Gastro Intestinal System**

5 hrs

Organisation, Secretions, Motility of G.I. Tract, Functions of Salivary glands, Liver & Gall Bladder, Pancreas

## **PRACTICAL**

### **1] Hematology-[demonstration only]**

10 hrs

RBC Count, WBC Count, Differential Count, Bleeding & Clotting Time, Hb Estimation, ABO & Rh Blood Group, PCV, ESR  
Calculation of blood indices.

### **2] Graphs**

8 hrs

- i] skeletal muscle-properties
- ii] Cardiac muscle- properties, effect of ACh & Adrenaline.

### **3] Physical fitness**

6 hrs

- i] breath holding
- ii] mercury column test ;
- iii] cardiac efficiency test-Harvard, step test- Master step test

### **4] Blood pressure—effects of change in posture & exercise**

6 hrs

### **5] Stethography**

2 hrs

- i] effect of deglutination;
- ii] voluntary hyperventilation

<b>6] Spirometry</b>	2 hrs
i] Lung volumes	
ii] timed vital capacity	
<b>7] Mosso`s finger ergography</b>	2 hrs
<b>8] Perimetry</b>	2 hrs
<b>9] Clinical examination</b>	22 hrs
respi/cvs/higher functions /memory/time /orientation/reflexes/motor & sensory system/abdomen, Cranial nerves	

### TEXT BOOKS

- 1] Course in Medical Physiology—Vol-I & II-by Dr Chaudhari
- 2] Medical Physiology by Dr. Bijlani
- 3] Text book on Medical Physiology-By Guyton

### REFERENCE BOOKS

- 1] Prep Manual for undergraduate physiology by Dr. Vijaya Joshi
- 2] Practical Physiology by Dr. Vijaya Joshi & Dr. S.D. Joshi

## SCHEME OF EXAMINATION

**Student should get minimum 50% marks for passing the examination.**

**1] Theory-80 Marks + Int. Assessment-20 Marks = Total-100 Marks**

### Model question paper

#### Section-A

**MCQ-Q-1] Based on single Best answer** [20 x 1] 20 marks  
(20 minutes)

#### Section-B

**SAQ-Q-2] Answer any Five out of Six** [5 X 3] 15 marks  
 Should include : General physiology, Blood, G.I. system, Endocrine system,  
 Excretory system, Temperature regulation, Reproductive system,  
 Special senses [eye/ear/ skin], Nervous system

**Q-3] Answer any Three out of four** [ 3 X 5] 15 marks  
 Should include i] Cardio- vascular system  
 ii] Respiratory system  
 iii] Exercise Physiology  
 iv]Nerve / Muscle

#### Section-C

**LAQ-Q-4] based on Nerve / Muscle** 15 marks

**Q-5] based on Nervous system** 15 marks

**OR**

**Q-6] based on CVS / Respiratory system** 15marks

[LAQ should give break up of 15 marks]

## 2] Practical- 80 Marks +Internal Assessment 20 Marks

a] Spots-based on 1 to 8 mentioned in practical syllabus [3x5]	15 marks
b] Viva- based on 1 to 8 mentioned in practical syllabus	20 marks
c] Clinical Physiology based on CVS, Respiratory system, Nervous system, Abdomen [4x10]	40 marks
D] Journal	05 marks

### INTERNAL ASSESSMENT ( I.A.)

One Terminal & one Prelim having 80 marks each in theory & practical. I.A. marks out of 20 for theory & 20 for practical.

**Student will be eligible to appear for University examination if he/ she gets minimum 35% marks.**

## BIOCHEMISTRY

[40 hrs-Didactic only]

### Objectives-

at the end of the course, the candidate will –

- 1] be able to describe structures & functions of cell in brief.
- 2] be able to describe normal functions of different components of food, Enzymes
- 3] define Basal metabolic rate & factors affecting the same [in brief], with special reference to obesity
- 4] be able to discuss nutritional aspects of carbohydrates, lipids, proteins & vitamins & their metabolism with special reference to obesity
- 5] define enzymes, discuss in brief, factors affecting enzyme activity
- 6] describe in details biochemical aspects of muscle contraction

### Syllabus-

- 1] **Cell biology** 1 hr
  - i] Membrane, structure & function
  - ii] Junction of intracellular organelle in brief- [no structural details needed]
- 2] **Carbohydrates** 5 hrs
  - i] Chemistry-definition, classification with examples
  - ii] Functions of carbohydrates with mucopolysaccharides [in details]
  - iii] Digestion & absorption of carbohydrates
  - iv] Glycogenesis, Glycogenolysis & their regulation, Cori's Cycle
  - v] Gluconeogenesis-significance of H.M.P. shunt
  - vi] Hormonal regulation of blood sugar, Metabolic disorders of glycogen, lactose intolerance, Diabetes mellitus.
- 3] **Proteins** 4 hrs
  - i] Chemistry-definition, function, classification of Amino acids, protein structure, effect of temperature on proteins, denaturation, coagulation, isoelectric pH & its importance
  - ii] Digestion & absorption of proteins
  - iii] Metabolism- De-amination, Transmethylation, Transamination & its importance, Detoxification of ammonia in the body & urea cycle

<b>4] Lipids</b>	5 hrs
<ul style="list-style-type: none"> <li>i] Chemistry, definition, classification of lipids &amp; fatty acids with examples &amp; functions</li> <li>ii] Digestion &amp; absorption of lipids</li> <li>iii] Metabolism- Beta oxidation of fatty acids &amp; its energetics, Ketone bodies formation &amp; utilization, cholesterol &amp; its importance [no biosynthesis needed], classification, sources &amp; function of lipoproteins</li> <li>iv] Fate of acetyl-Co A (in brief )</li> <li>v] Fate of Glycerol (in brief)</li> </ul>	
<b>5] Nucleic Acids</b>	2 hrs
D.N.A. /R.N.A.-definition, structure & function, Catabolism of purine – Gout	
<b>6] Enzymes</b>	4 hrs
<ul style="list-style-type: none"> <li>i] Definition, classification, factors affecting enzyme action</li> <li>ii] Co-enzyme &amp; Isoenzyme with their significance</li> <li>iii] Inhibition &amp; types of inhibitors</li> <li>iv] Clinical &amp; therapeutic use of enzymes</li> </ul>	
<b>7] Vitamins</b>	4 hrs
<ul style="list-style-type: none"> <li>i] Water &amp; Fat soluble with definition &amp; classification</li> <li>ii] Individual vitamins-sources, Co-enzyme forms &amp; functions</li> <li>iii] Daily requirement, absorption &amp; transport, deficiency &amp; toxicity</li> </ul>	
<b>8] Biological Oxidation-</b>	1 hr
Oxidative phosphorylation & ETC in brief	
<b>9] Minerals</b>	2 hrs
<ul style="list-style-type: none"> <li>i] Phosphorous, Calcium- sources, RDA, absorption, transport, excretion, function &amp; disorder</li> <li>ii] Fluoride, Iron, Zinc, Copper, Selenium, Iodine-sources, RDA, absorption, transport, excretion, function &amp; disorder</li> </ul>	
<b>10] Acid- Base Balance, Water - Electrolyte balance &amp; imbalance</b>	2hrs
<b>11] Hormones</b>	2 hrs
Definition, classification, mechanism of action	
<b>12] Muscle Contraction</b>	2 hrs
<ul style="list-style-type: none"> <li>i] Contractile elements</li> <li>ii] Biochemical events during contraction;</li> <li>iii] Energy metabolism in skeletal &amp; cardiac muscle</li> </ul>	
<b>13] Connective Tissue</b>	2 hrs
Biochemistry of connective tissues	
<b>14] Nutrition</b>	2 hrs
<ul style="list-style-type: none"> <li>i] Importance of nutrition, Calorimetry, Respiratory quotient &amp; its significance</li> <li>ii] Energy requirement with reference to age, sex, thermogenesis, Specific dynamic action of foods</li> <li>iii] Balanced Diet and Role of Fibers in diet</li> <li>iv] Nitrogen balance &amp; its significance, Deficiency disorders (Protein energy malnutrition)</li> </ul>	
<b>15]Clinical Biochemistry</b>	2 hrs

- i] Liver function test & Renal function test
- ii] Relevance of blood levels of glucose, urea, Ca, Phosphorous & Uric acid
- iii] Enzymes-Amylase, CPK, LDH and its isoenzymes
- iv] Lipid profile-Tri -glyceride, cholesterol (HDL, LDL, VLDL)
- v] Proteinuria, Glycosuria

## TEXTBOOKS

- 1] Biochemistry-by Dr. Deb Jyoti Das,
- 2] Biochemistry-by-Dr Satyanarayan
- 3] Text book of Biochemistry for Medical students by-Dr Vasudevan/ Shri kumar

## REFERENCE BOOK

- 1] Review of Biochemistry [24th edition] by Harpar

*SCHEME OF EXAMINATION- [THEORY ONLY]*

**Student should get minimum 50% marks for passing the examination.**

## THEORY-40 MARKS + INTERNAL ASSESSMENT-10 MARKS

### Section-A

**MCQ - Q-1]** Single best answer [10 x 1] 10 marks

### Section-B

**SAQ - Q-2]** To attempt any FIVE out of Six answers- [5 x 3] 15 marks

### Section-C

**SAQ- Q-3]** To attempt any THREE out of Four answers-[3 x 5] 15 marks

## INTERNAL ASSESSMENT

One Terminal & one Prelim having 40 marks each in theory. I.A. marks out of 10 for theory. Student will be eligible to appear for University examination if he/ she gets minimum 35% marks.

## FUNDAMENTALS OF EXERCISE THERAPY

DIDACTIC	100 HRS
PRACTICAL/LABORATORY	180 HRS
Total	<b>280 hrs</b>

### Objective-

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

- 1] Define the various terms used in Mechanics, Biomechanics & Kinesiology, Recall the basic principles of Physics related to mechanics of movement/ motion
- 2] Describe & acquire the skill of use of various tools of the Therapeutic gymnasium
- 3] Acquire knowledge of Movements – Classification, Principles, Techniques & Uses.
- 4] Acquire knowledge of different starting & derived positions
- 5] Acquire the skill of application of various massage manipulations & Describe Principles, Physiological effects, Therapeutic use, Merits & Demerits.
- 6] Acquire skill of assessment -Sensations, Superficial & Deep Reflexes, Pulse rate/ Heart rate, Blood Pressure, Chest Expansion, Respiratory Rate, Limb Length & Girth Measurement on Models
- 7] Acquire knowledge & skill of Relaxation
- 8] Describe the skill & significance of Group & Recreational Exercises & their Advantages & Disadvantages
- 9] Be able to describe Principles of Yoga, its types, its physiological & psychosomatic effects & demonstrate standard yoga postures used by the beginners
- 10] Be able to demonstrate General Fitness exercises & understand principles of General Fitness

### Syllabus-

#### 1] General Biomechanics

35 hrs

Force – Analysis of Force

Mechanics of Position-Gravity, Center of Gravity, Line of Gravity, Base, Equilibrium, Fixation & Stabilisation

Mechanics of Movements -Axes & Planes, Speed, Velocity, Work, Mechanical Advantage, Energy, Power, Acceleration, Momentum, Inertia & Friction  
Simple Machine -

- a) Levers – Types & Uses, Angle of Pull
- b) Pulleys- Types & Uses
- c) Pendulum

d) Elasticity - Springs Types of muscle work	
<b>2] Starting &amp; derived positions</b> Description of position, Muscle Work & Effects & Uses.	20 hrs
<b>3] Movement</b> Classification, Principles, Techniques & Uses.	25 hrs
<b>4] Range of Motion –</b> Goniometry (Technique, Uses & Types of Goniometer )	30 hrs
<b>5] Limb length measurement</b> (only lower limb - apparent, true, supra-trochanteric) & <b>girth measurements</b>	10 hrs
<b>6] Assessment of Sensations &amp; Reflexes, Blood Pressure, Pulse Rate, Respiratory Rate &amp; Chest Expansion.</b>	10 hrs
<b>7] Relaxation-</b> Principles, methods & effects/ uses	15 hrs
<b>8] Massage manipulations-</b> Principles, Classification, Effects, Merits, Demerits, Skills on extremities, scalp, spine, abdomen, face.	20 hrs
<b>9] Therapeutic Gymnasium-</b> Suspension Therapy- Principles, Types, Technique & Uses, Use of accessories such as pulleys, springs, shoulder wheel, finger ladder, therapeutic ball, parallel bars, wall bar etc with applied biomechanical principles.	20 hrs
<b>10] Group Exercises &amp; Recreational Activities</b> Principles, Merits & Demerits.	10 hrs
<b>11] General fitness exercises-</b> Principles & Technique (Warm up-stretching -mobility- strengthening – cool down)	40 hrs
<b>12] Yoga</b> Principles of Yoga, Basic Yogic postures & their physiological effects	40 hrs
A] In Standing Position	
a] Padahastasana /Padangusthanasana	
b] Trikonasana	
c] Utkatasana	
d] Tadasana	
B] In Sitting Position	
a) Padmasana /Siddhasana/Sukhasana	
b) Paschimottanasana	
c) Yogamudrasana	
d) Virasana,	
e) Vajrasana	
f) Gomukhasana	
C] In Supine Lying Position	
a) Ardha Halasana / Halasana	
b) Setu bandhasana	
c) Pavan-muktasana	
d) Sarvangasana	
e) Shavasana	
D] In Prone Position	
a) Bhujangasana	
b) Ardha- Shalabhasana / Shalabhasana	
c) Dhanurasana	
d) Naukasana	

### 13] Hydrotherapy

5

hrs

Principles, Description of the Tank, Application, Effects, Indications & Contraindications

### PRACTICAL-

Skills included in sr.no.2 to 12 above to be practiced on self & models

### TEXT BOOKS

- 1] Principles of Exercise Therapy—Dena Gardiner
- 2] Massage- Holley & Cook
- 3] Practical Exercise Therapy—Margaret Hollis
- 4] Measurement of Joint Motion: A Guide to Goniometry--Cynthia Norkins
- 5] Measurement of physical function - Cynthia Norkins

### REFERENCE BOOKS

- 1] Therapeutic Exercise—Carolyn Kisner & Kolby
- 2] Physiotherapy in Orthopaedic conditions-by Jayant Joshi [for the study of Basic Yogic postures]
- 3] Yoga for Health & Peace- S. Nimbalkar
- 4] Massage for Therapists – M. Hollis

## SCHEME OF EXMAINATION

**Student should get minimum 50% marks for passing the examination**

THEORY—80 MARKS + INT. ASSESSMENT—20 MARKS Total = 100 MARKS

#### Section-A

**MCQ-Q-1]**-based on -Single best answer [20 x 1] 20marks  
(20 Min.)

#### Section-B

**SAQ- Q-2]**-Answer any 5 out of 6—[5 x 3] 15 marks

Q-3]-Answer any 3 out of 4 -[3 x 5] 15 marks

#### Section-C

**LAQ-Q-4]**[compulsory]—based on Biomechanics 15 marks

Q-5] based on any other topic 15 marks

OR

Q-6] based on any other topic 15 marks

### **PRACTICAL--80 marks + INT. ASSESSMENT--20 marks = TOTAL-100 MARKS**

A] Long case-based on Massage / Goniometry/ Suspension Therapy 35 marks

i] Cognitive-Bio-physics, Biomechanical principles, Indications,  
Contra-indications, Documentation of findings etc 20 marks

ii] Psychomotor & affective-skills 15 marks

B] a] Short Case – Any one of the following 20 marks

Passive movements / Relaxation /Limb length/ Girth

Measurement/Yoga posture / General fitness/Group

Exercises/ Blood Pressure, Pulse Rate / Chest Expansion,

Respiratory rate /Sensation /Reflex Testing /Starting OR Derived  
position

b] Spots-Based on Therapeutic Gymnasium [Four] [5x4] 20 marks

**INTERNAL ASSESSMENT ( I.A.)**

One Terminal & one Prelim having 80 marks each in theory & practical. I.A. marks out of 20 for theory & 20 for practical.

Student will be eligible to appear for University examination if he/ she gets minimum 35% marks.

**FUNDAMENTALS OF ELECTRO THERAPY**

**DIDACTIC -100 HRS**  
**PRACTICA /LABORATORY-120 HRS**  
**Total -220 hrs**

**Objectives-**

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

- 1] Understand the physics, principles & Laws of Electricity & Electro-magnetic spectrum
- 2] Describe in brief, certain common electrical components such as transistors, valves, capacitors, transformers etc & the simple instruments used to test /calibrate these components such as potentiometer, oscilloscope etc of the circuitry, & will be able to identify such components.
- 3] Describe the mains electrical supply, Electric shock & precautions, Basic electrical components & their functions
- 4] Enumerate types of currents & describe production of High Frequency, Medium Frequency & Low Frequency electrical currents. Describe the panel diagrams of the machines
- 5] Describe & identify various types of electrodes used in therapeutics, describe electrical skin resistance & significance of various media used to reduce skin resistance
- 6] Acquire knowledge of various superficial thermal agents, their physiological & therapeutic effects, Merits & Demerits & acquire the skill of application
- 7] Acquire knowledge of Cold Therapy, its physiological & therapeutic effects, Merits & Demerits & acquire the skill of application
- 8] Describe effects of environmental & man-made electro- magnetic field at the cellular level & risk factors on prolonged exposure

**Syllabus-****1] Physics And Basic Electrical Components****40 hrs**

- A) Conductors & Insulators, Static Electricity- Electric Field, Potential difference & Capacitance. Current Electricity – E.M.F., Ohm's Law, Thermal Effects of Electrical Currents. Magnetism – Properties of Magnet, Electromagnetic Induction, Lenz's Law
- B) Rheostat- Types, Potentiometer, Ammeter, Oscilloscope, Transformer -Types,Capacitor, Inductor, Thermionic Valves, Transistors, Pulse Generator – Astable Multivibrator
- C) Mains Supply – Fuse, Plug, Switch, Wiring of the house, Dynamo. Shock – Types, Effects, Precaution & Treatment

- 2] Cellular Biophysics** **10 hrs**  
Reception & Emission of E.M.F. signals
- 3] E.M. spectrum** **10 hrs**  
Wavelength, Velocity & Frequency. Laws governing Radiation.
- 4] Fundamentals of Low frequency currents** **30 hrs**  
i] Types of Currents  
ii] Characteristics of Currents – Pulse- Types of Pulses, Phase, Waveform, Interpulse interval & Frequency  
iii] Types of electrodes, Galvanic Skin Resistance –Significance & Methods to reduce GSR
- 5] Fundamentals of High frequency currents—** **50 hrs**  
i] Oscillator Circuit, Pulse Generator, Circuit of Short Wave Diathermy  
ii] Physical Principles, Components of Panel, Testing of Apparatus – Short Wave Diathermy, Ultra-Sonic, Ultra Violet Rays, Interferential Therapy, LASER (Only Physical Principles & Types)  
iii] Hazards of environmental currents
- 6] Biophysics of Superficial heat** **65 hrs**  
Physical principles, components of panel, Physiological effects, Therapeutic effects/uses, Merits & Demerits, Indications & Contra-indications, Skills of Application-  
i] Paraffin wax bath,  
ii] Whirl Pool,  
iii] Contrast bath  
iv] Hydro-collator / Hot packs  
v] Infra Red  
vi] Home remedies
- 7] Cryotherapy** **15 hrs**  
Physiological effects, Therapeutic effects/uses, Merits & Demerits, Indications & Contra-indications, Skills of Application.

## **PRACTICALS**

- 1] Panel diagrams-Identification of components, Testing the mains supply & Machines
- 2] Skills of application of superficial thermal agents & Cryotherapy

## **TEXT BOOKS**

- 1] Clayton's Electro therapy – Kitchen-3<sup>RD</sup> Ed
- 2] Clayton's Electro therapy – Kitchen-10<sup>th</sup> Ed
- 3] Electro therapy explained –by Low & Reed
- 4] Electrotherapy : Evidence Based Practice- Kitchen 11<sup>th</sup> Ed

## **REFERENCE BOOK**

- 1] Principles & Practice of Electro Therapy –Joseph Kahn
- 2] Clinical Electro Therapy-by Nelson & Currier
- 3] Thermal Agents – by Susan L. Michlovitz
- 4] Principles & Practice of Electro Therapy- Dr Saeed Anwar

### **SCHEME OF EXAMINATION**

**Student should get minimum 50% marks for passing the examination**

#### **THEORY-80 MARKS, I.A.-20 MARKS;**

THEORY- model question paper—

[80 MARKS]

Section-A

MCQ-Q-1]- based on Single best answer –[20x 1]

20 marks

Section-B-

SAQ -Q-2]- to answer any FIVE out of six—[5 x3]

15 marks

Q-3]- to answer any THREE out of Four-[3 x 5]

15 marks

Section-C-

LAQ- Q-4]-based on superficial Thermal agents/ Cryotherapy

15 marks

Q-5] based on Medical Electronics

15 marks

OR

Q-6] based on Low / Medium / High Frequency Current

15 marks

#### **PRACTICAL-80 MARKS +, I.A.-20 MARKS TOTAL = 100 MARKS**

A] Long case-based on superficial thermal agent / Cryotherapy  
marks

35

[Cognitive–Medical electronics, Physiological /Biophysical  
principles, Therapeutic effects, Indications & Contraindications]  
[ 20 marks]+ [Psychomotor + Affective- skills] [15 marks]

B] - -----

40 marks

a] Spots [Six] –5 Minutes per Spot-Identification of Electronic  
Equipment/ Component & Panel Diagram of any Two Equipments  
[5 x 6] [30 marks]

b] Testing of Equipment — SWD / Ultra Sonic / IFT / Stimulator,  
TENS Machine [10 minutes] [10 marks]

C] Journal

5 marks

#### **INTERNAL ASSESSMENT ( I.A.)**

One Terminal & one Prelim having 80 marks each in theory & practical. I.A. marks out of 20 for theory & 20 for practical. Student will be eligible to appear for University examination if he/ she gets minimum 35% marks.

### **SCHEME OF EXAMINATION OF B. P .T – I**

<b>Subject</b>	<b>Theory</b>	<b>Duration</b>	<b>I.A.</b>	<b>Total</b>	<b>Practical</b>	<b>IA</b>	<b>Total</b>
ANATOMY	<b>80</b>	<b>3 hours</b>	<b>20</b>	<b>100</b>	<b>80</b>	<b>20</b>	<b>100</b>
PHYSIOLOGY	<b>80</b>	<b>3 hours</b>	<b>20</b>	<b>100</b>	<b>80</b>	<b>20</b>	<b>100</b>
BIOCHEMISTRY	<b>40</b>	<b>2 hours</b>	<b>10</b>	<b>50</b>	<b>-</b>	<b>-</b>	<b>-</b>
FUNDAMENTALS OF EXERCISE THERAPY	<b>80</b>	<b>3 hours</b>	<b>20</b>	<b>100</b>	<b>80</b>	<b>20</b>	<b>100</b>
FUNDAMENTALS OF ELECTRO THERAPY	<b>80</b>	<b>3 hours</b>	<b>20</b>	<b>100</b>	<b>80</b>	<b>20</b>	<b>100</b>

**Passing Criteria – 50 % of total marks each in theory & practical**

**Eligibility to appear for University exam – 35 % in Internal Assessment.**

# **PADMASHREE DR.D.Y.PATIL UNIVERSITY**

## **COURSE - PHYSIOTHERAPY** **DEGREE CONFERRED – B.P.T.**

### **II B.P.T.**

**[This syllabus is applicable from 2005-2006 i.e.-from the batch  
Who gets admitted to the I B.P.T. course in the year-2004-2005]**

<b>Subjects—</b>	<b>Transcript Hours-1400</b>
1] Pathology-----	50 hrs
2] Microbiology -----	30 hrs
3] Pharmacology-----	45 hrs
4] Kinesio Therapeutics -----	325 hrs
5] Electrical agents-----	250 hrs
6] Psychology -----	40 hrs
Seminars-----	60 hrs
Supervised Clinical practice-----	600 hrs

[To practice clinical skills under the supervision of Senior clinical staff at the O.P.D. set up & to maintain a Register /Log book in which the prescribed Case Histories & written assignments are to be documented & to obtain the signature from the respective section In-charge at the end of the assignment.

]

# **Pathology**

**[DIDACTIC- 50 hrs]**

**Objectives-**At the end of the course, the student will be able to-

- 1] Acquire the knowledge of concepts of cell injury & changes produced thereby in different tissues & organs, capacity of the body in healing process
- 2] Recall the etio -pathogenesis, the pathological effects & the clinico-pathological correlation of common infections & non-infectious diseases
- 3] Acquire the knowledge of concepts of neoplasia with reference to the etiology, gross & microscopic features, diagnosis & prognosis in different tissues & organs of the body
- 4] Correlate normal & altered morphology of different organ systems in different diseases needed for understanding disease process & their clinical significance [with special emphasis to neuro-musculo-skeletal & cardio-respiratory systems]
- 5] Acquire knowledge of common immunological disorders & their resultant effects on the human body.
- 6] Understand in brief, about the Haematological diseases & investigations necessary to diagnose them & determine their prognosis

**1] a] General Pathology-**

Cell injury-causes, mechanism & toxic injuries with special reference to Physical, Chemical & ionizing radiation

**b] Reversible injury [degeneration]-**

types, morphology, swelling, hyaline, fatty changes

**c] Intra- cellular accumulation-**

hyaline, mucin

**d] Irreversible cell injury-**

types of necrosis, apoptosis, calcification, dystrophic & metastasis

**e] Extra-cellular accumulation-**

amyloidosis, calcification-Pathogenesis, morphology

**2] Inflammation & Repair:-**

- a] Acute inflammation-features, causes, vascular & cellular events

- b] Morphologic variations
- c] Inflammatory cells & mediators
- d] Chronic inflammation:-causes, types, non-specific & Glaucomatous - with examples
- e] Wound healing by primary & secondary union, factors promoting & delaying healing process.
- f] Healing at various sites-including bones, nerve & muscle
- g] Regeneration & repair

### **3] Immuno-pathology-[basic concepts]**

- a] Immune system:-organization, cells, antibodies, regulation of immune responses
- b] Hyper-sensitivity
- c] Secondary immuno-deficiency including HIV
- d] Organ transplantation

### **4] Circulatory disturbances-**

- a] Edema-pathogenesis, types, transudates/exudates
- b] Chronic venous congestion-lung, liver, spleen
- c] Thrombosis-formation, fate, effects
- d] Embolism-types, clinical effects
- e] Infarction-types, common sites
- f] Gangrene-types, aetiopathogenesis
- g] Shock-pathogenesis, types, morphologic changes

### **5] Deficiency disorders-Vitamin A, B, C, D,**

### **6] Growth Disturbance**

- a] Atrophy-malformation, agenesis, metaplasia, dysplasia, hypertrophy, hyperplasia
- b] Neoplasia, calcification, histogenesis, biologic behavior, difference between benign & malignant tumor
- c] Malignant neoplasms –grades, stages, local & distal spread
- d] Carcinogenesis-environmental carcinogens
- e] Chemical, Occupational, heredity, viral
- f] Precancerous lesions & Ca in situ
- g] Tumor & host interactions-systemic effects, metastatic or direct spread of tumors affecting bones, spinal cord leading to paraplegia etc.

### **7] Medical Genetics**

- a) Karyotypic abnormalities
- b) Mendelian disorders
- c) Inborn errors of metabolism

### **8] Specific Pathology:-**

#### **A] CVS**

- a] Arteriosclerosis- Ischemic heart diseases – angina, myocardial infarction- Pathogenesis /Pathology
- b] Hypertension
- c] C.C.F.
- d] Rheumatic & Congenital H.D.
- e] Peripheral vascular diseases

#### **B] Respiratory -**

- a) Obstructive Lung Disorders
- b) Pneumonia (lobar, broncho, viral & Restrictive Lung Disorders)
- c] T.B.-primary, secondary, morphologic types

- d) Pleural Diseases & Complications
- e) Respiratory Failure

### **C] Neuropathology**

- a] Reaction of nervous tissue to injury, infection & ischaemia
- b] Pyogenic meningitis, TBM, Viral infection
- c] Cerebro-vascular diseases-atherosclerosis- Thrombosis, embolism, aneurysm, hypoxia, infarction & hemorrhage
- d] Effects of Hypotension on CNS.
- e] Coma
- f] Polio myelitis, Leprosy, Demyelinating diseases, Parkinsonism, Cerebral palsy, metachromatic leucodystrophy, Dementia, Hemiplegia /paraplegia, Wilson`s disease
- g] Space Occupying Lesion
- h] Peripheral nerve injury

### **9] Muscle diseases-**

Muscular dystrophy, hypertrophy, Pseudo-hypertrophy, atrophy, Poliomyelitis, Myositis ossificans, necrosis, regeneration, Myotonia, Hyperplasia

### **10] Neuro –muscular junction-**

Myasthenia gravis, Myasthenic syndrome, Lambert Eaton Syndrome

### **11] Bone & Joints-**

- a] Fracture healing, Osteomyelitis, Rickets, Osteomalacia, Bone tumors, Osteoporosis
- b] P.I.D., Haemarthrosis, Gout, T.B.
- c] Arthritis- degenerative, inflammatory, Rheumatoid, Ankylosing spondylitis & Tenosynovitis

### **12] Urinary-**

Paralytic bladder, Common urinary tract infections urinary calculi

### **13] G.I. system –**

Gastric/duodenal ulcer, Enteric fever, TB, Enteritis, Gastritis [related to consumption of NSAID]

### **14] Endocrine-**

Thyroid functional disorders, Diabetes Mellitus.

### **15] Hepatic diseases-** Cirrhosis, emphasis to systemic effects of portal hypertension

### **16] Skin-Melanin pigment disorders-** Vitiligo,

Tenia versicolor, Psoriasis, Bacterial/fungal infections, cutaneous TB, Scleroderma, SLE, Leprosy, Alopecia

### **17] Clinical pathology [including Demonstrations]**

- a] Anaemia [deficiency] T.C./D.C /Eosinophilia, E.S.R., C.P.K
- b] Muscle/skin/nerve biopsy
- c] Microscopic appearance of muscle necrosis, fatty infiltration
- d] Lab investigation in liver & renal failure

## **TEXT BOOKS**

- 1] Text book of Pathology-by Harsh Mohan
- 2] Pathologic basis of disease by Cotran, Kumar,Robbins
- 3] General Pathology –by Bhende

#### **INTERNAL ASSESSMENT—**

One terminal & one preliminary in Pathology of 50 marks each -**Total-100 marks**

Internal Assessment marks to be calculated out of 10

## **MICROBIOLOGY**

**DIDACTIC-30 hrs**

**Objectives-**At the end of the course, the candidate will have sound knowledge of the agents responsible for causing human infections, pertaining to C.N.S., C.V.S., musculo -skeletal, & Respiratory system

### **Syllabus-**

<b>1] General Microbiology-</b>	
Introduction & scope	1 hr
<b>2] Classification of Microorganisms &amp; morphology of Bacteria</b>	1 hr
<b>3] Sterilization &amp; disinfection –[basic concepts]</b>	2 hrs
Hospital acquired infection, universal safety precautions and waste disposal	2 hrs
<b>4] Immunology</b>	5 hrs
i] Antigen-antibody—reaction & application for diagnosis	
ii] Immune response- normal/abnormal	
iii] Innate immunity & acquired immunity [vaccination]	
iv] Hyper-sensitivity & auto-immunity	
<b>5] Laboratory Diagnosis of Infection</b>	3 hrs
<b>6] Bacteriology</b>	7 hrs
i] Infection caused by gram +ve cocci ;Gas gangrene, Clostridium, Diphtheria	
ii] Infection caused by gram –ve cocci, Septicemia, cholera, Shock, Typhoid & Diarrhoea	
iii] Mycobacterial infection- tuberculosis, Leprosy, Atypical Microbacterium	
iv] Syphilis-morphology & pathogenesis [VDRL]	
<b>7] Viruses</b>	3 hrs
i] Introduction & general properties,	
ii] HIV	
iii] Hepatitis	
iv] Polio, measles, congenital viral infections, Rubella, CMV, Herpes	
<b>8] Mycology</b>	1hr
Mycetoma, Aspergillosis & Candidiasis	

### 9] Parasites affecting C.N.S

Malaria, Filariasis, Toxoplasmosis, Cysticercosis & Echinococcosis

### 10] Applied Microbiology

3 hr

As relevant to diseases involving Bones, Joints, Nerves, Muscles, Skin, Brain, Cardiopulmonary system & Burns

### TEXT BOOKS

Textbook of Microbiology-by R. Ananthnarayan & C.K.Jayaram Panniker.

Textbook of Microbiology – Dr. Baweja

Textbook of Microbiology – Dr. D.R.Arora

### INTERNAL ASSESSMENT

One terminal & one preliminary Theory examination to be conducted of 30 marks each

#### Total-60 marks

Internal Assessment marks to be calculated out of 10

### SCHEME OF EXAMINATION-[THEORY ONLY]

**Student should get minimum 50% marks for passing the examination**

# Pathology	50 marks
Microbiology	30 marks
IA.	20 marks
<b>Total</b>	<b>100 marks</b>

*# Emphasis to be given to topics related to Musculo skeletal / Neurological / Cardio-vascular/ Respiratory conditions & Wound / Ulcers*

### Section-A

**M.C.Q.-based on Single best answer**

- 30 minutes

**Q-1-based on Pathology** [1 x 20]

20 marks

**Q-2-Based on Microbiology** [1 x 10]

10 marks

### Section-B

**S.A.Q.-based on Pathology**

**Q-3- To answer Any FIVE out of Six** [ 5 X 3]

15 marks

**Q-4-To answer any-THREE out of Four** -[3 X 5]

15 marks

### Section-C

**S.A.Q.-based on Microbiology**

**Q-5-Answer any FOUR out of Five** [ 4 x 5]

20 marks

### INTERNAL ASSESSMENT

Mentioned individually under Pathology & Microbiology .

**Student will be eligible to appear for University examination if he/ she gets minimum 35% marks**

## PHARMACOLOGY

DIDACTIC-45 hrs

**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 Physio Therapy; list their adverse reactions, precautions to be taken & contra- indications, -formulation & route of administration
- 2] Identify whether the pharmacological effect of the drug interferes with the Therapeutic response of Physiotherapy & vise-a-versa
- 3] Indicate the use of analgesics & anti-inflammatory agents with movement disorders with consideration of cost, efficiency & safety for individual needs.
- 4] Get the awareness of other essential & commonly used drugs by patients-The basis for their use & common as well as serious adverse reactions.

## Syllabus

### A] MUST KNOW-

- i] Drugs described in topics 2 to 9;
- ii] Pharmacological effects & mechanism, Formulation, Route of administration, salient Pharma-kinetic features
- iii] Adverse Reactions
- iv] Precautions & contra-indications

### B] DESIRABLE

- i] Major group of drugs described in topics 10, 11 & 12
- ii] Basis of use in indicated conditions
- iii] Common & serious Adverse Reactions

### TOPICS

#### 1] General pharmacology

Drug Pharmaco-kinetics, Pharmacology-adverse reaction, factors modifying drug effects, sources & routes of administration

8 hrs

#### 2] Drug activity of CNS

Introduction

[1 hr]

Alcohols, Sedatives & Hypnotics

[2 hrs]

10 hrs

Anti- convulsants	[1 hr]	
Analgesics & Antipyretics-specially Gout & R.A.	[3 hrs]	
Psycho Therapeutics	[1 hr]	
General anaesthetic, Local anaesthetic	[1 hr]	
<b>3] Drugs acting on peripheral nervous system</b>		2 hrs
i] Adrenergic [1 hr];		
ii] Cholinergic [1 hr]		
<b>4] Drug therapy in Parkinsonism</b>		1 hr
<b>5] Skeletal muscle relaxants</b>		1 hr
<b>6] Drugs acting on CVS</b>		7 hrs
i] Hypertension		
ii] Beta blockers		
iii] Ca channel ACE Inhibitors		
iv] Blockers [prazosin]		
Diuretics		
CCF		
Angina		
Antiarrhythmia, Shock		
Drug satisfying Homeostasis		
<b>7] Drugs acting on Respiratory system</b>		2 hrs
For Upper Respiratory Tract infections-sinusitis, cough, laryngitis, pharyngitis, For Bronchial asthma, For COPD- effects of prolonged drug administration		
<b>8] Insulin [1 hr]</b>		2 hrs
<b>&amp;</b>		
<b>oral anti-diabetic drugs [1hr]</b>		
<b>9] Chemotherapy</b>		5 hrs
i] General principles	[1 hr]	
ii] Sulfa drugs in urinary tract infection Tetra/chloro penicillin		
Cephalosporin, Aminoglycides, Macrolids	[2hrs]	
iii] Anti Tuberculosis	[1 hr]	
Anti-leprosy	[1 hr]	
<b>10]Endocrine:</b>		4 hrs
i] Introduction Thyroid & Antithyroid [1 hr]		
ii] Estrogen + Progesterone [1 hr]		
iii] Steroids + Anabolic Steroids [2 hrs]		
<b>11] Haematinics, Vitamin B; Iron;</b>		1hr
<b>12] Vaccines &amp; Sera</b>		1 hr
<b>13] Vitamin D, Calcium; Phosphorus, Magnesium</b>		1 hr

## TEXT BOOKS

- 1] Pharmacology-by Gaddum
- 2] Pharmacology & Pharmacotherapeutics Revised 19<sup>th</sup> Edition 2005 by Dr.R.S. Satoskar & Dr. S.D. Bhandarkar
- 3] Pharmacology principle of Medical practice-by Krantx, & Carr
- 4] Pharmacological basis of Therapeutics-by Goodman, L. S. Gilman A
- 5] Essential of Medical Pharmacology 5<sup>th</sup> Edition 2003 by Dr. K.D. Tripathi

## SCHEME OF EXAMINATION

Theory	-40 marks
Internal assessment	-10 marks

**Student should get minimum 50% marks for passing the examination**

### Section A

**Q-1-M.C.Q.based on single best answer from Must Know area** 10 marks

### Section-B

**Q-2-S.A.Q.--To answer any FIVE out of six- [5 X 3]** 15 marks

### Section-C

**Q-3-S.A.Q.—To answer any THREE out of four [3 X 5]** 15marks

## INTERNAL ASSESSMENT

One terminal & one preliminary examination to be conducted of 40 marks each

**TOTAL-80marks**

Marks to be calculated out of **10**.

**Student will be eligible to appear for University examination if he/ she gets minimum 35% marks**

## KINESIO-THERAPEUTICS

Didactic	-125 hrs
Practical / laboratory	-200 hrs
Total	325 hrs.

### Objectives

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

- 1] Understand biomechanics of joints of the skeletal system
- 2] Analyze Normal human posture [static & dynamic], Biomechanics of normal Gait and Activities of daily living
- 3] Describe the Biophysical properties of connective tissue & effect of mechanical loading & factors which influence mobility of articular & periarticular soft tissues
- 4] Apply the biomechanical principles for assessment & training methods for mobility, muscle strength & gait training.
- 5] Describe the physiological effects, -Therapeutic uses, merits/demerits of various exercise modes.
- 6] Demonstrate various therapeutic exercise on self, & also acquire the skill of application on Models
- 7] Acquire the skill of assessment of isolated & group muscle strength/ endurance & learn different strength/ endurance training
- 8] Understand different techniques to improve pulmonary function.
- 9] Acquire knowledge of neural control and methods of training co-ordination & Balance

### Syllabus

- 1] Biomechanics of joints of the skeletal system [spine, extremities, T.M. joint & Thoracic cage]
- 2] Kinetics & Kinematics of various Activities of Daily Living - supine to sitting, sitting to standing, squatting, climbing up & down, lifting, pulling, pushing, overhead activities
- 3] Muscle Strength
  - a] Assessment of muscle strength – subjective & objective methods [group & individual muscle testing as subjective & 1/10 RM & dynamometry as objective method], Trick movements (Vicarious movements)
  - b] Factors that influence the strength of the normal muscle, Changes seen in muscle after training – Hypertrophy, Hyperplasia
  - c] Types of muscle work – Isometric, Concentric & Eccentric, General principles of strength training-: Overload (Intensity, Duration & Frequency)/ Motivation /Learning/ Reversibility /Specificity
  - d] Training programme- Isokinetic, Isoinertial etc.
- 4] Muscle Endurance
  - a) Assessment of Muscle Endurance

- b) Principles of Training
- c) Training Programme
- 5] Mobility
  - a] Bio-physical properties of connective tissue [contractile & non-contractile], Stress -Strain Curve, Elasticity, Plasticity, Creep, Hysteresis
  - b] Stretching – Types, Assessment, Principles, Techniques, Indications & Contra-indications
  - c] Traction [cervical & lumbar]
- 6] Posture –
  - Normal Posture, Methods of Assessment of the Posture-Sitting /standing/ Lying, Physiological deviations of the posture
- 7] a) Biomechanics of normal Gait, Methods of assessment of Gait
  - b) Walking Aids like axillary /elbow crutches, walking sticks, Tripod, Walker – Measurement, Pre-crutch training, Types of crutch gaits
- 8] Co-ordination & Balance-
  - Neural control, Methods & Principles of co-ordination exercises -Frenkel`s exercises
- 9] Techniques to improve Pulmonary function
  - a) Breathing exercises-Goals, Types-Inspiratory, Expiratory, Segmental. Forced expiratory Techniques-Huffing/ Coughing, Incentive Spirometry, Bladder Balloon, Flutter, Threshold loading device, Peak flow meter.
  - b) Postural drainage, Humidification, Nebulisation, Active cycle of Breathing (ACB), Autogenic drainage
  - c) Postures to promote relaxation
- 10] Principles of Home programme & Ergonomic advise
- 11] Functional Re-education
  - a] Lying to Sitting
  - b] Sitting Activities & Gait
  - c] Limb Activity

## **PRACTICAL**

- 1) Manual Muscle Testing – Individual & Group
- 2) Mobility Techniques – Passive Stretching of Tight Muscles, Traction- Manual & Mechanical (only cervical), Hold Relax & Contract Relax Techniques
- 3) Assessment of Posture
- 4) Assessment of Gait, Crutch Gaits
- 5) Co-ordination Exercises
- 6) Breathing Exercises, Postural Drainage Positions, ACB
- 7) Functional Re-education – Lying to Sitting, Sitting Activities & Gait, Limb Activities

## **TEXT BOOKS**

- 1] Practical Exercise Therapy-by Margaret Hollis,
- 2] Therapeutic Exercise by Carolyn Kisner
- 3] Joint Structure & Function by Cynthia Norkins
- 4] Muscle testing by Kendall
- 5] Principles of Exercise Therapy–Dena Gardiner

## **REFERENCE BOOKS**

- 1] Clinical evaluation - Lacote (for isolated assessment of abdominal muscles)

- 2] Orthopaedic Evaluation - Magee
- 3] PNF - Knott and Voss
- 4] Manual Muscle Testing by Daniel

## SCHEME OF EXMINATION

**Student should get minimum 50% marks for passing the examination**

THEORY	80 marks
Internal assessment	20 marks
<b>Total</b>	<b>100 marks</b>

### THEORY

#### Model question paper:

#### Section-A

Q-1]-M.C.Q.-based on Single best answer (20 minutes) 20 marks

#### Section-B SAQ

Q-2] Answer any FIVE out of Six [5 X 3] 15 marks

Q-3] Answer ant THREE out of Four [3 X 5] 15 marks

#### \* Section-C-L.A.Q

Q 4] [Compulsory]-Based on Biomechanics 15 marks

Q 5] Based on Muscle Strength / Endurance / Posture/Gait 15 marks

#### OR

Q-6] Based on Mobility/Pulmonary function 15 marks

\*[LAQ should give Break up of 15 marks -e.g. -[3 + 5 + 7] etc]

### PRACTICAL

#### I.A

**80 marks**  
**20 marks**  
**Total-100 marks**

### PRACTICAL

A] One long case based on muscle strength/mobility/  
Pulmonary function training 35 marks

[Cognitive -kinesiological & /or Physiological principles of application,, Indication & contraindications of skills (20 marks)  
+ Performance of skills & home Exercise, Ergonomic advice,  
Methods of Documentation etc [Psychomotor & affective]-(15 marks)]

#### B] Short Case I & II Each of 20 marks

40 marks

Short Case I based on MMT/ Posture/Gait

Short Case II based on Co-ordination/ Functional-Re-ed/Breathing exercises/Postural

drainage  
C] Journal

5marks

**INTERNAL ASSESSMENT** –One terminal & one preliminary of 80 marks each in Theory & Practical Marks to be calculated out of 20 each in theory & practical. **Student will be eligible to appear for University examination if he/ she gets minimum 35% marks**

## **ELECTRICAL AGENTS**

**Didactic            100 hrs**

**Practical-/Laboratory    150 hrs**

**Total                250hrs**

### **Objectives:**

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

- 1] Describe the Physiological effects, Therapeutic uses, Merits/Demerits, Indications & Contraindications of various Low, Medium & High Frequency currents.
- 2] Describe the Physiological effects & therapeutic uses of various therapeutic ions & topical pharmaco-therapeutic agents to be used for the application of Iontophoresis & Phono phoresis
- 3] Acquire the skill of Application of the Electro therapy modes on models, for the purpose of Treatment
- 4] Acquire an ability to select the appropriate mode as per the tissue specific & area specific application

### **Syllabus-**

#### **1] Direct current (Constant) –**

Polarity Testing, Physiological & Therapeutic Effects Of D.C.& Safety measures, Cathodal /Anodal Galvanism, Iontophoresis using various ions & pharmaco- therapeutic drugs- Effects & concentration of Ions, Tap water Iontophoresis

#### **2] Low Frequency Currents-**

Physiological & Therapeutic Effects/ Uses of Faradic-type Current, Techniques Of Application Interrupted Direct Current – Pulse Duration & Type of Pulse, Physiological & Therapeutic Effects/ Uses of Interrupted D.C., Technique of Application, Definition & Stimulation of Motor Points on Models

T.N.S.- Types, Physiological Effects & Uses, Techniques of Application, Contra Indications High Voltage Currents - Physiological Effects & Uses, Techniques of Application, Contra Indications Didynamic currents - Physiological Effects & Uses, Techniques of Application, Contra Indications Micro-currents- Definition, Physiological Effects & Uses

#### **3] Medium Frequency Currents-**

Electro Physiological Effects & Uses, Contra Indications, Techniques of Application, Endovac attachment, Advantage of I.F.T. over low frequency currents

#### **4] Electro Magnetic Fields-**

Production of Heat,  
S.W.D.-Continuous/Pulsed, Physiological Effects & Therapeutic Effects, Contraindications,  
Techniques of Application, Types of Electrodes.

**5] Therapeutic Ultra Sound**-pulsed/continuous, Physiological Effects & Therapeutic Effects,  
Contra Indications, Techniques of Application

**6] Ultra Violet Rays**

Types of UVR, Physiological & Therapeutic Effects, Contra Indications, Test dose, Local & General Applications

**7] Laser**

Properties, Types of Cold Laser, Physiological & Therapeutic Effects, Contra Indications

**8] Care of wound**

Application of Electrical Agents like Therapeutic currents, Ultrasound, U.V.R.& LASER, etc.

**9] Bio-Feedback-methods**

**PRACTICAL**

Skills of application to be practiced on models-in Low Frequency, Medium Frequency, SWD, Ultra Sonic & Ultra Violet Rays

**TEXT BOOKS**

- 1] Clayton's Electro therapy – Kitchen-3<sup>RD</sup> Ed
- 2] Clayton's Electro therapy – Kitchen-10<sup>th</sup> Ed
- 3] Electro therapy explained –by Low & Reed
- 4] Electrotherapy : Evidence Based Practice- Kitchen 11<sup>th</sup> Ed

**REFERENCE BOOK**

- 1] Principles & Practice of Electro Therapy –Joseph Kahn
- 2] Clinical Electro Therapy-by Nelson & Currier
- 3] Thermal Agents – by Susan L. Michlovitz
- 4] Principles & Practice of Electro Therapy- Dr Saeed Anwar
- 5] Thermal Agents in Rehabilitation by Susan L. Michlovitz

## SCHEME OF EXAMINATION

**Student should get minimum 50% marks for passing the examination**

THEORY	80 MARKS
I.A.	20 MARKS
<b>TOTAL</b>	<b>100 MARKS</b>

### THEORY

**Model question paper**

#### Section-A

**M.C.Q- Q-1] based on Single best answer- [20x1]** 20 marks  
(20 minutes)

#### Section-B

**S.A.Q Q-2] to answer any FIVE out of Six-[5 x 3]** 15 marks

**Q-3] to answer any THREE out of Four-[3 x 5]** 15 marks

#### \*Section-C

**L.A.Q-Q-4] should be based on Electro Magnetic Fields, US, UVR, Laser** 15 marks

**Q-5] should be based on Direct, Low Frequency, Medium Frequency currents** 15 marks  
OR

**Q-6] should be based on Direct, Low Frequency, Medium Frequency currents** 15 marks

\* LAQ should give break up of 15 marks-e.g. -[3 + 5+ 7]

<b>PRACTICAL/LAB</b>	<b>80 MARKS</b>
<b>I.A.</b>	<b>20 MARKS</b>
<b>100 MARKS</b>	

**Total**

### PRACTICAL

**A] Long case- Stimulation of Motor points /U.V.R. test dose** 35 marks

- i] Cognitive-Medical electronics/Physiological principles/ Indications  
Contraindications [20 marks];
- ii] Skill-[Psychomotor & affective] [15marks ]

**B] Short Case I & II Each of 20 marks** 40 marks

Short Case I - Based on Skill of Application of SWD, US, UVR for treatment purpose

Short Case II - Based on Skill of Application of IFT, TENS, Faradic current, Direct current

**C] Journal**

5 marks

**INTERNAL ASSESSMENT**

One terminal & one preliminary of 80 marks each in Theory & Practical.

Marks to be calculated out of 20 each in theory & practical. **Student will be eligible to appear for University examination if he/ she gets minimum 35% marks**

**PSYCHOLOGY**

**DIDACTIC-40 HRS**

**Objectives**

At the end of the course, the candidate will

- 1] Be able to define the term Psychology & its importance in the Health delivery system, will gain knowledge of Psychological maturation during human development, growth, & alterations during aging process
- 2] Be able to understand the importance of psychological status of the person in health & disease, environmental & emotional influence on the mind & personality
- 3] Acquire the knowledge as to how to deal with the patient

**Syllabus**

- 1] Developmental Psychology & its Theories [in brief]-Physio-psychological changes during infancy, early & middle childhood, adolescent stage, Puberty, adulthood & old age
- 2] Definition of Psychology, its nature-fields & sub-fields of psychology
- 3] Schools of thought -Psycho-analytical theory, Behaviorism, Gestalt, Structuralism, Functionalism [In Brief]
- 4] Learning-Role of learning in human life, Conditioning
- 5] Emotions-nature & relationship with autonomic nervous system-Theories of emotions
  - a] James Lange theory
  - b] Scatter Singer theory
  - c] Cannon Bard theory
- 6] Memory-types, Forgetting, causes of forgetting
- 7] Attention & perception-Nature of attention [in brief], Nature of perception, Principles of grouping
- 8] Conflict & Frustration-Types-Common defense mechanism, stress, common reactions to frustrations
- 9] Abnormal Psychology [in brief]-
  - a] Introduction
  - b] Difference between normal & abnormal psychology
  - c] Causes
  - d] Anxiety disorders- Phobias, Obsessive-compulsive disorder, Hysterical convulsion disorder
  - e] Affective disorders-depression, mania, bipolar disorders
  - f] Psychotic disorders-Types of Schizophrenia

**TEXT BOOKS**

- 1] Introduction to Psychology by Morgan C.T. & King R.A.- 7th edn [Tata McGraw-Hill publication
- 2] Introduction to Psychology by Munn N.L.- [Premium Oxford, I.B.P. publishing co.]

## **SCHEME OF EXAMINATION (Theory only)**

**Student should get minimum 50% marks for passing the examination**

THEORY	40 MARKS
I.A.	10 MARKS
TOTAL	50 MARKS

### **Section-A**

**Q-1-MCQs** –Based on Single Best answer (10 minutes) 10 marks

### **Section-B**

**Q-2-SAQ**—to answer any FIVE out of Six---[5 x 3] 15 marks

### **Section-C**

**Q-3-SAQ**—to answer any THREE out of Four—[3X5] 15 marks

### **Internal Assessment (I.A).**

One Terminal & one preliminary Theory examination of 40 marks each to be conducted.

Total 80 Marks

I.A. Marks to be calculated out of 10.

**Student will be eligible to appear for University examination if he/ she gets minimum 35% marks**

## EXAMINATION PATTERN OF B.P.T.-II

Sr.No	Name	Theory	Duration	I.A.	Total	Practical	I.A	Total
1	Pathology & Microbiology	50	3 hours	10	100	-	-	-
		30		10				
2	Pharmacology	40	2 hours	10	50	-	-	-
3	Kinesio Therapeutics	80	3 hours	20	100	80	20	100
4	Electrical Agents	80	3 hours	20	100	80	20	100
5	Psychology	40	2 hours	10	50	-	-	-

**Passing Criteria – 50 % of total marks each in theory & practical**  
**Eligibility to appear for University exam – 35 % in Internal Assessment.**

# **PADMASHREE DR.D.Y.PATIL UNIVERSITY**

## **COURSE - PHYSIOTHERAPY** **DEGREE CONFERRED – B.P.T.**

### **III B.P.T.**

[This syllabus is applicable from 2006-2007, i.e.-from the batch who gets admitted to the I B.P.T. course in 2004-2005]

<b>Subjects-</b>	<b>Transcript Hours</b>
1] Surgery - 130 hrs	
General Surgery-----	50 hrs
Orthopedics-----	80 hrs
2] Medicine- 90 hrs	
Cardio-vascular & pulmonary Medicine-----	29 hrs
Neurology-----	31 hrs
General Medicine, Rheumatology & Gerontology	15 hrs
Clinical	15 hrs
3] Paediatrics-	30 hrs
4] Dermatology	10 hrs
*5] Physical Diagnosis & Therapeutic skills-[D-6 : Cl-12 =18 hrs/week]-----	400 hrs
6] Psychiatry -----	60 hrs
7] Seminar-----2 hrs alternate weeks-----	60 hrs
[including 1] Case presentation, 2] Literature review]	
8] Supervised PhysioTherapy Practice-----3 hrs/ day, 5 days/week-----	520 hrs
9] Obstetrics and Gynecology -----	30 hrs
10] Community Health/Sociology & Biostatistics-----	70 hrs
section-I—Community health---	20 hrs
section-II-Biostatistics-----	30 hrs
section-III- Sociology-----	20 hrs

**Total Hours ----- 1400 hrs**

\* -To evaluate/assess & to practice Physio Therapy skills at the Acute care/Indoor as well as O.P.D set ups, under the supervision of Senior Physio therapist. A register/ Log book to be maintained to document the Evaluation /Functional analysis & Functional diagnosis reports of minimum 3 cases per assignment & signature to be obtained from respective section In-charge at the end of each assignment

# **SURGERY**

## **GENERAL SURGERY**

Didactic	-40 hrs
Clinical	-10 hrs
<b>Total</b>	<b>50 hrs</b>

### **Objective**

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

- 1] Describe the effects of surgical trauma & Anaesthesia
- 2] Classify, clinically evaluate & describe the surgical management in brief in
  - a] Wounds & Ulcers
  - b] Burns
  - c] Head injuries
- 3] Describe pre-operative evaluation, surgical indications & various surgical approaches & post operative management in various abdominal/ thoracic/peripheral vascular conditions/ENT conditions / Opthal conditions/ Plastic Surgery conditions
- 4] Recall the surgical approaches in the form of line diagram & will be able to describe the components of soft tissues cut to reach the target tissue & the possible Post operative complications
- 5] Be able to read & interpret findings of the X ray-chest.

## **Syllabus-**

### **General**

**( 11 hrs)**

- 1] Effect of Anesthesia & surgical trauma, Hemorrhage, Shock, Water & Electrolyte imbalance (1 hr)
- 2] Inflammation-acute & chronic-signs, symptoms, complications & management (1 hr)
- 3] Wounds/ ulcers-classification, healing process, management (2 hrs)
- 4] Common abdominal surgeries for G.I.tract, Genito-urinary system Scar during surgical approach through abdominal wall. Scar management in brief (2 hrs)
- 5] Modified Radical mastectomy-complications & management (1 hr)
- 6] Amputation-types, sites, complications & management (1 hr)
- 7] Burns-causes, classification complications & management (3 hrs)

### **Neuro Surgery**

**( 6 hrs)**

- 1] Head Injury – management (1 hr)
- 2] Intra cranial & spinal tumors (1 hr)
- 3] Surgeries of Head & neck in neurosurgical conditions & post operative care (2 hrs)
- 4] Congenital & childhood disorders of nervous system like Hydrocephalus, spina bifida etc. clinical features, surgical management & post operative care (2 hrs)

**Cardio vascular -thoracic surgery****( 7 hrs)**

- 1] Surgical approach
- 2] Post operative complications & management in Thoracotomy, Thoracoplasty, Lobectomy, Pneumonectomy, Decortication, CABG, Valvular Surgery, Congenital Heart Disease Surgeries, Surgery for Peripheral Vascular Disease

**E.N. T. Surgery****( 5 hrs)**

- 1] Upper respiratory tract surgery & post operative care
- 2] Tracheostomy – indications, surgical approach & management
- 3] Surgery for cancer – indications & post operative care
- 4] Surgical procedures in VII<sup>th</sup> cranial nerve palsy

**Ophthalmic Surgery****( 1 hr)**

- 1] Surgeries for III, IV & VI cranial nerve palsy

**Plastic Surgery****( 10 hrs)**

- 1] Skin grafts & flaps-Types, indications with special emphasis to burns, wounds, ulcers
- 2] Tendon transfers, with special emphasis to hand, foot & facial paralysis,
- 3] Keloid & Hypertrophied scar management
- 4] Reconstructive surgery of peripheral nerves
- 5] Micro vascular surgery

**CLINICAL-****( 10 hrs)**

- A] Evaluation & presentation of one case each in burns, wound & ulcer, Head Injury, peripheral vascular condition, post Radical mastectomy, post thoracic surgery, post abdominal surgery
- B] Auscultation of chest & its interpretation, Reading & interpretation of the X-ray chest.

OBSERVATION- one abdominal & one thoracic surgery & one surgery of skin graft/flap

**TEXT BOOKS**

Undergraduates surgery- Nan  
Short Practice of surgery – Bailey & Love

## **ORTHOPAEDICS**

Didactic	55 hrs
Clinical	25 hrs
<b>Total</b>	<b>80 hrs</b>

**Objectives-**At the end of the course, the candidate will –

- 1] Be able to discuss the Pathophysiology, clinical manifestations & conservative /Surgical management of various traumatic & cold cases of the Musculoskeletal Conditions
- 2] Gain the skill of clinical examination & interpretation of the preoperative cold cases & all the post- operative cases
- 3] Will be able to read & interpret
  - a]- salient features of the X-ray of the spine & Extremities
  - b]- pathological/ biochemical studies pertaining to Orthopaedic condition
- 4] Will be able to correlate the radiological findings with the clinical findings

## **Syllabus-**

- 1] Post trauma Pathology, clinical manifestations, healing process in bone & intra articular & extra articular soft tissues. ( 2 hrs)
- 2] Fractures & dislocations of upper extremity & lower extremity (16hrs)
  - i) Classification
  - ii) Conservative treatment
  - iii) Surgical intervention -
    - a) Surgical approach
    - b) soft tissue section / repair
    - c) internal / external fixation / arthroplasty
    - d) post operative complications e) post operative management & management of complications
- 3] Fractures & dislocations of spine, fractures of thoracic cage, shoulder girdle & pelvis (5 hrs)
  - i) Conservative treatment
  - ii) Surgical intervention -
    - a) Surgical approach
    - b) soft tissue section / repair
    - c) internal / external fixation / arthroplasty
    - d) post operative complications
    - e) post operative management & management of complications
- 4] Management of Metabolic disorders (2 hrs)
  - a) Osteoporosis
  - b) Osteomalacia
- 5] Brachial Plexus / Lumbo Sacral Plexus & Peripheral nerve injuries – sites, management (3hrs)
- 6] Deformities of the spine – scoliosis / kyphosis (1hr)

7] Deformities of extremities like Varus / Valgus, Torsion, Deformities of hands & feet	(2 hrs)
8] Congenital Malformation like CTEV, CDH etc.	(2hrs)
9] Vascular Disorders like Avascular Necrosis, Perthe's Disease, Compartmental Syndrome	(2 hrs)
10] Reconstructive surgery for bone lengthening	(1hr)
11] Reconstructive surgery in Polio & Cerebral Palsy	( 2hrs)
12] Inflammatory/Infectious diseases of the bone & joints e.g..T.B.,Osteomyelitis	( 2hrs)
13] Tumors of bone & management	( 1hr)
14] Surgical intervention for Arthritis like O.A, RA, Ankylosing Spondylitis	(2hrs)
15] Reconstructive surgery in soft tissue lesions of Shoulder, Knee & Ankle	(3hrs)
16] Aetiology of Back Pain & surgical management	(3 hrs)
17] Common Sports injuries / overuse injuries & management	( 2hrs)
18] Traumatic Amputation & management	(1 hr)
19] Hand injury & management	(2 hrs)
20] X-rays of extremities & spine	(1 hr)

### **CLINICAL- ( 25 hrs)**

Evaluation & presentation of

- a] one acute soft tissue lesion [including nerve injury]
- b] 2 cases of degenerative arthritis of extremity joint
- c] 2 degenerative arthritis of spine
- d] one case of acute P.I.D
- e] 2 chronic backaches
- f] 1 post operative case of fractures of extremities
- g] one traumatic paraplegia /quadriplegia

### **OBSERVATION-**

At least 2surgeries of # internal fixation, one knee/hip replacement &Re-constructive surgery of the tendons

### **TEXTBOOKS**

Outline of Fractures 8<sup>th</sup> edition - Adams  
Outline of Orthopaedics 8<sup>th</sup> edition - Adams  
System of Ortho - Apley  
Essentials of Orthopaedics for Physiotherapists- John Ebnezar  
Essential Orthopaedics - Maheshwari

## **SCHEME OF EXAMINATION IN THE SUBJECT-"SURGERY"**

**THEORY- 80MARKS**

**I.A- 20 MARKS**

**TOTAL-100MARKS**

**Student should get minimum 50% marks for passing the examination**

#-Section B shall be set & assessed by a General Surgeon only

\* Section C shall be set & assessed by an Orthopaedic surgeon only

### **Section-A**

**Q-1-M.C.Q.-[10 x 1] based on single best answer in Surgery** 10 Marks  
(10 minutes)

**Q-2-MCQs –[10x 1] based on single best answer in Orthopaedics]** 10 Marks  
(10 minutes)

### **# Section-B**

**Q-3-S.A.Q.-To attempt any five out of Six –[5 x 3 ]** 15 Marks  
[based on General Surgery, Neurosurgery, and Ophthalmology]

**Q-4-S.A.Q.-To attend any Three out of four [3x 5 ]**  
[based on Cardiovascular-thoracic surgery, ENT  
and Plastic Surgery] 15 Marks

### **\* Section-C**

**Q-5-S.A.Q.-To attempt any FIVE out of Six–[5 x 3 ]** 15 Marks  
[based on Any topic in Orthopaedics ]

**Q-6-S.A.Q.-To attempt any Three out of Four [3 x5]**  
[ based on Any topic in Orthopaedics ] 15 Marks

## **INTERNAL ASSESSMENT**

Theory

1. General surgery – 1 terminal and one preliminary examination 40 marks each

(Section A- 10 marks, B -15 marks, C- 15 marks) as per university pattern

2. Orthopedics – 1 terminal and one preliminary examination 40 marks each

(Section A- 10 marks, B -15 marks, C- 15 marks) as per university pattern

Internal assessment should be calculated out of 20 marks

**Student will be eligible to appear for University examination if he/ she gets minimum 35% marks.**

# MEDICINE

[90 hrs]

## GENERAL MEDICINE, RHEUMATOLOGY & GERONTOLOGY

Didactic 14 hrs

## CARDIO-VASCULAR & PULMONARY MEDICINE

Didactic 30 hrs

## NEUROLOGY

Didactic 31 hrs

Clinical 15 hrs

**Objectives-**At the end of the course, the candidate will

- 1] be able to describe Etiology, Pathophysiology, Signs & Symptoms & Management of the various Endocrinal, Metabolic, Geriatric & Nutrition Deficiency conditions
- 2] be able to describe Etiology, Pathophysiology, Signs & Symptoms, Clinical Evaluation & Management of the various Rheumatological Cardiovascular, Respiratory & Neurological Conditions
- 3] Acquire skill of clinical examination of Musculoskeletal, Pulmonary, Cardio-vascular & Neurological System;
- 4] be able to interpret auscultation findings with special emphasis to pulmonary system, Chest X-ray, Blood gas analysis, P.F.T. findings, Blood studies done for Neurological & Rheumatological conditions
- 5] be able to describe the principles of Management at the Medical Intensive Care Unit.

## Syllabus-

### General Medicine

(14hrs)

#### 1] Disorders of Endocrine system (4hrs)

- i) Diabetes (1 hr)
- ii) Thyroid, Pituitary & Adrenal conditions (2 hrs)
- iii) Calcium Metabolism (1 hr)

#### 2] Degenerative / Rheumatological Conditions (5 hrs)

- i) Rheumatoid Arthritis } (2 hrs)
- ii) Osteo Arthritis }
- iii) S L E
- iv) S S A } (3 hrs)
- v) Gout }
- vi) Polymyositis }

#### 3] Geriatric Conditions (3 hrs)

- i) Aging Process & Alzheimer's disease (1 hr)
- ii) Osteoporosis (1 hr)
- iii) General Health Care, Wellness clinic (1 hr)

#### 4] Nutrition Deficiency Diseases (1 hr)

**5] Drug Abuse / Intoxication (1 hr)**

**CARDIO-VASCULAR & RESPIRATORY MEDICINE**

**(30 hrs)**

**1] Cardio-vascular diseases- (13 hrs)**

- a) Hypertension-systemic (1hr)
- b) I.H.D -Angina & Myocardial infarction (2 hrs)
- c) Arrhythmia – classification (1 hr)
- d) Valvular Heart Disease – i) Congenital ii) Acquired (2 hrs)
- e) Rheumatic Fever (1hr)
- f) Congestive Heart Disease (1hr)
- g) Infective Endocarditis (1 hr)
- h) Geriatric Cardio Vascular problems & management (1hr)
- i) ECG – Normal & Variations due to ischemia & infarction (1 hr)
- j) PVD (2 hrs)

**2] Diseases of the respiratory system**

**(17 hrs)**

- a) Common Infectious diseases like Tuberculosis, Pneumonia, Lung Abscess, Bronchiectasis (3 hrs)
- b) Diseases of Pleura like Pleural Effusion, Pneumothorax, Hydropneumothorax, Empyema (3 hrs)
- c) Occupational lung diseases like Silicosis Asbestosis, Pneumoconiosis, Brucellosis, Farmer's Lung (1hr)
- d) Obstructive Lung Diseases like Bronchitis, Emphysema, Bronchial Asthma, Cystic Fibrosis (3 hrs)
- e) Interstitial Lung Diseases (1 hr)
- f) Geriatric respiratory problems & management (1 hr)
- g) Intensive Medical Unit – Infrastructure & Treatment (2 hrs)
- h) Introduction of clinical examination –Breath sounds / X ray chest / Blood gas analysis /P.F.T. (3 hrs)

**NEUROLOGY**

**(31 hrs)**

- 1] Circulation of the brain & spinal cord (1 hr)
- 2] Cerebro-vascular accidents – Thrombosis, Embolism, Haemorrhage (2 hrs)
- 3] Disorders of Cerebral Cortex (2 hrs)
- 4] Extra Pyramidal lesions – Basal Ganglia (2 hrs)
  - i) Parkinsonism (1 hr)
  - ii) Athetosis, Chorea, Dystonia & Spasmodic Torticollis (1 hr)
- 5] Polyneuropathy (2 hrs)
  - i) G B Syndrome (1 hr)
  - ii) Diabetic, Alcoholic & SACS (1 hr)
- 6] Disorders of nerve roots and peripheral nerves (1 hr)
- 7] Disorders & Diseases of muscle (3 hrs)
  - i) Myopathy – Types (1 hr)
  - ii) Muscular Dystrophy – Types (1 hr)
  - iii) Inflammatory Disorders – Polymyositis & Dermatomyositis
  - iv) Myotonia
- 8] Disorders of Anterior Horn Cell (3 hrs)
  - i) Motor Neurone Disease (1 hr)
  - ii) SMA, Syringomyelia, Peroneal Muscular Atrophy, Polio (2 hrs)
- 9] Multiple Sclerosis (1 hr)

- 10] Infections of the nervous system like Encephalitis, Neurosyphilis, H I V infection, Herpes, Meningitis, Transverse Myelitis, Tabes Dorsalis & T.B. Spine ( 2 hrs)
- 11] Epilepsy ( 1 hr)
- 12] Tetanus ( 1 hr)
- 13] Disorders of Cerebellar function ( 2 hrs)
- 14] Disorders of Cranial Nerves & Special Senses (2hrs)
- 15] Disorders of Myoneural Junction – Myasthenia Gravis & Myasthenic Syndrome (1 hr)
- 16] Dysfunction of Autonomous Nervous System in Spinal Cord Lesions ( 1 hr)
- 17] Neurogenic Bladder (1 hr)
- 18] Cerebro Spinal Fluid (1 hr)
  - I) Formation & Absorption
  - II) Status in Various Disorders
- 19] Sexually transmitted diseases & HIV (2 hrs)

### **CLINICAL-**

**(15 hrs)**

Evaluation & presentation of Two cases Each in

- i) U.M.N.lesion
- ii) L.M.N.lesion
- iii) Respiratory Condition
- iv) Cardio Vascular Condition
- v) Degenerative / Rheumatological Condition
- vi) General Medical Conditions like Obesity, Nutritional disorders, Diabetes Mellitus & Metabolic bone disorders

### **TEXT BOOKS**

API Textbook of medicine  
 Medicine for students 5<sup>th</sup> edition-Golwala  
 Principles & Practice of medicine 16<sup>th</sup> ed.- Davidson

### **REFERENCE BOOK**

Textbook of Medicine-Harrison

## SCHEME OF EXAMINATION IN "MEDICINE"

THEORY	80 MARKS
INTERNAL ASSESSMENT	20 MARKS
TOTAL	100 MARKS

**Student should get minimum 50% marks for passing the examination**

### Section A

**MCQ.-Q-1] [20 x 1] single best answer**

[Based on all the topics included in Medicine syllabus] 20 marks

### Section B

**SAQ.- Q-2]-to attempt any FIVE out of Six answers--[5 x 3 ]**

[based on Cardiovascular & Respiratory conditions] 15 marks

**Q-3]-to attempt any THREE out of Four answers [3 x 5 ]**

[ based on Neurology ] 15 marks

### # Section C

**LAQ.Q-4]-[compulsory-]-based on Neurology**

15 marks

**Q-5] [based on Cardio-vascular conditions]**

15 marks

OR

**Q-6] [based on Respiratory conditions]**

15 marks

# L.A.Q. should specify the break up of marks-e.g.-[3 + 5 + 7 ]

## INTERNAL ASSESSMENT

One test each in

*1] General Medicine, Rheumatology & Gerontology	Theory	25 marks
	Clinical	25 marks
	Total	50 marks
2] Cardio-vascular & Respiratory Medicine	Theory	50 marks
	Clinical	25 marks
	Total	75 marks
3] Neurology	Theory	50 marks
	Clinical	25 marks
	Total	75 marks
*4] Pediatrics	(Syllabus Below)	50 marks
*5] Dermatology	(Syllabus Below)	50 marks

TOTAL 300 marks

Internal Assessment marks to be calculated out of 20

\*This subject needs individual passing in the exam to pass in the I.A. of the subject Medicine

**Student will be eligible to appear for University examination if he/ she gets minimum 35% marks**

## **PAEDIATRICS [30 hrs]**

Didactic	20 hrs
Clinical	10 hrs

**Objective-**At the end of the course, the candidate will

- 1] Acquire knowledge in brief about intra-uterine development of the foetus
- 2] Be able to describe normal development & growth of a child, importance of Immunization & breast-feeding
- 3] be able to describe neuromuscular, musculoskeletal, cardio-vascular & pulmonary conditions related to immunological conditions, nutritional deficiencies, infectious diseases, & genetically transmitted conditions.
- 4] Acquire skill of clinical examination of a neonate /child with respect to neurological, musculoskeletal & respiratory function

### **Syllabus-**

- 1] Normal intra-uterine development of foetus (1 hr)
- 2] Normal development & growth (2 hrs)
- 3] Immunization, Handling of the child, Significance of breast-feeding (1 hr)
- 4] Common causes for Developmental disorders like Sepsis, Prematurity, Asphyxia & Hyperbilirubinemia (1 hr)
- 5] Brain damage-Cerebral Palsy-types & Medical Management (2 hrs)
- 6] Spinal Cord Disorders like Poliomyelitis, Spinal Dysraphism, Spina Bifida, Meningocele, Myelomeningocele (2 hrs)
- 7] Common infections of C.N.S. & peripheral nervous system (2 hrs)
- 8] Epilepsy (1 hr)
- 9] Mental Retardation (1 hr)
- 10] Genetically transmitted neuro-muscular conditions (1 hr)
- 11] Malnutrition related conditions (1 hr)
- 12] Juvenile R A & other Immunological conditions of Musculoskeletal system (1 hr)
- 13] Common diseases of the respiratory system like Asthma, Bronchitis, T.B., Pneumonia & bronchiectasis (2 hrs)
- 14] Rheumatic & Congenital heart disease (2 hrs)

### **CLINICAL- (10 hrs)**

- 1] Normal & abnormal reflexes in neonate & child
- 2] Examination of the nervous system
- 3] Examination of respiratory system
- 4] Examination of cardiovascular system

### **TEXT BOOKS**

Essentials of Paeds.- O.P Ghai  
D.K. Series in Paeds.

**\* Internal assessment to be conducted at the end of the completion of the term—  
Total-50 marks [Theory 25 marks + Viva 25 marks]  
passing in this IA is mandatory to pass in the I.A. of the subject Medicine**

## **DERMATOLOGY [10 HRS]**

Objectives- At the end of the course, the student will-

1] Be able to describe the Pathophysiology, Signs & Symptoms, Clinical Features, Examination & Management of Common Skin Conditions like Leprosy, Psoriasis, Vitiligo, Acne, Alopecia, Bacterial & Fungal Infections of the skin, Auto-Immune Disorders, H.I.V. & Sexually Transmitted Diseases.

### **Syllabus-**

- 1] Introduction to Dermatology, basic skin lesions & History taking
- 2] Skin infections ( Part I) – Scabies / Pediculosis / Bacterial infections
- 3] Skin infections ( Part II) – viral / Fungal / Cutaneous T.B.
- 4] Psoriasis / Sebaceous Dermatitis / Atopic Dermatitis / Hand eczemas (Psoriasis & Eczema)
- 5] Pigmentary Disorders ( Vitiligo, Melasma) & Drug Reactions ( Urticaria, Fixed Drug Eruption, Maculo Papular Drug Rash, Erythema Multiform minor, Steven Johnson Syndrome, Toxic Epidermal Necrolysis)
- 6] Leprosy & Deformity
- 7] Autoimmune Disorders (Scleroderma, Systemic Lupus Erythematosus, Dermatomyositis)
- 8] Acne & treatment of Acne (Including cosmetic & Dermatological procedures) (Chemical peels, MDA etc.)
- 9] Disorders of Scalp ( Dandruff, Chronic Hair loss, Alopecia)
- 10] Sexually Transmitted Diseases
- 11] HIV & Cutaneous manifestations
- 12] Topical therapy in Dermatology.

### **TEXT BOOKS**

An Illustrated Handbook of Skin Diseases and STDs - Khopkar

## **INTERNAL ASSESSMENT**

One Theory examination of 50 marks to be conducted at the end of the term & Passing in the I.A. is mandatory

## **PHYSICAL DIAGNOSIS & THERAPEUTIC SKILLS [400 hrs]**

### **HUMAN DEVELOPMENT, GROWTH & AGING PROCESS**

Didactic	20 hrs
Laboratory	10 hrs

### **ELECTRODIAGNOSIS**

Didactic	20 hrs
* Lab./Clinical	60 hrs

### **FUNCTIONAL ANALYSIS**

Didactic	30 hrs
* Lab./Clinical	80 hrs

### **MANIPULATIVE SKILLS**

Didactic	10hrs
Practical/Laboratory	120 hrs

### **NEURO THERAPEUTIC SKILLS**

Didactic	10hrs
Practical/Laboratory	40 hrs

### **Objectives-**

At the end of the course, the candidate will

- 1] Be able to describe the human development & maturation; with special emphasis to sensory, motor, psychological & social aspects & alteration during aging process
- 2] Acquire the skill of detection & objective documentation of the Neurological, Musculo-skeletal, cardiovascular & pulmonary dysfunctions such as Pain, altered muscle power mobility, endurance, limb length, posture, gait, hand function & A.D.L. in adult & paediatric conditions & acquire skill & interpretation of Exercise tolerance test to arrive at the Functional diagnosis as per ICIDH-2
- 3] Acquire the skills to use on patients, the therapeutic currents, for Electro-diagnosis of sensory & motor dysfunction & pain.
- 4] Be able to describe the physiology of nerve conduction & motor units, interpretation of Normal & Abnormal EMG, Nerve Conduction studies & Late responses
- 5] Acquire the simple skills of mobilization of the extremities on models
- 6] Acquire the neuro therapeutics skills on models
- 7] Be able to do Interpretation of common investigations used for functional diagnosis

### **Syllabus-**

#### **1] General principles & course of Human development & maturation**

- a] aspects-
  - i) physical
  - ii) motor
  - iii) sensory
  - iv) cognitive
  - v) emotional
  - vi) cultural
  - vii) social

- b] Factors influencing human development & growth-
  - i) Biological
  - ii) environmental
  - iii) inherited
- c] Principles of maturation –
  - i] in general
  - ii] in anatomical directional pattern-
    - Cephalo-caudal
    - proximo-distal
    - centero-lateral
    - mass to specific pattern
    - gross to fine motor development
    - reflex maturation tests
  - iii] development in specific fields
    - oromotor development
    - sensory development
    - neurodevelopment of hand function

## **2] Electro diagnosis**

- a) Physiology of resting membrane potential & action potential, Propagation of Action Potential, Volume conduction
- b) Physiology of muscle contraction
- c) Motor unit & Recruitment pattern of motor unit – Size principle
- d) Therapeutic current-as a tool for electro diagnosis.
  - i) Physiological principles
  - ii) Faradic Galvanic Test, Strength Duration Curve, Test for Sensory & Pain Threshold, Test for Pain Tolerance
- e) Electro-myography
  - i) Principles
  - ii) Instrumentation –Basic components like CRO, Filter, Amplifier & Preamplifier, Types of Electrodes
  - iii) Normal & Abnormal EMG pattern
    - i) Insertional activity/at rest
    - ii) on minimal contraction
    - iii) on maximal contraction
- f) Nerve Conduction Studies
  - i) Principles & Technique
  - ii) F wave
  - iii) H reflex and Blink reflex

## **3] Basics in Manual Therapy & Applications with Clinical reasoning**

- a] Examination of joint integrity
  - i) Contractile tissues
  - ii) Non contractile tissues
- b] Mobility -assessment of accessory movement & End feel
- c] Assessment of articular & extra-articular soft tissue status
  - i) Myofascial assessment
  - ii) Acute & Chronic muscle hold
  - iii) Tightness
  - iv) Pain-original & referred
- d] Basic principles, Indications & Contra-Indications of mobilization skills for joints & soft tissues
  - i) Maitland

- ii) Kaltenborn
- iii) Mulligan
- iv) Mckenzie
- iv) Muscle Energy Technique
- v) Myofascial release
- vi) Cyriax
- vii) Neuro Dynamic Testing

#### **4] Basics in Neuro Therapeutics Skills & Applications with Clinical reasoning**

- i) Principles of Neuro Developmental Technique, Rood's Technique, PNF, Brunnstrom
- ii) Technique
- iii) Indications for Application

#### **5] Assessment of Movement Dysfunction**

- i) Higher functions
- ii) Cranial nerves
- iii) Sensations & sensory organisation
- iv) Joint mobility
- v) Body image
- vi) Tone
- vii) Reflexes- Superficial & Deep
- viii) Voluntary control
- ix) Muscle Strength
- x) Co -ordination
- xi) Balance
- xii) Endurance
- xiii) Trick movements
- xiv) Limb Length
- xv) Posture
- xvi) Gait
- xvii) Scales-Berg's Balance, Ashworth, Glasgow Coma, DGI, Barthel's Index, STREAM format
- xviii) Functional Diagnosis using ICIDH-2
- xix) Interpretation of Electro diagnostic findings, routine Biochemical investigations

#### **6] Assessment of Cardio Vascular & Pulmonary Dysfunction**

- i) Vital parameters
- ii) Chest expansion
- iii) Symmetry of chest movement
- iv) Breath Holding Test
- v) Breath Sounds
- vi) Rate of Perceived Exertion ( RPE)
- vii) Quality of life questionnaire
- viii) Exercise Tolerance – six minutes walk test, Theoretical bases of Bruce's protocol
- ix) Peak Flow Meter
- x) ABG, PFT, ECG- (Normal & Variations due to Ischaemia & Infarction)
- xi) X-ray Chest
- xii) Ankle Brachial Index
- xiii) Tests for Peripheral Arterial & Venous circulation
- xiv) Functional Diagnosis using ICIDH-2

#### **7] Assessment of Musculoskeletal Dysfunction**

- i) Tightness
- ii) Joint Mobility

- iii) Muscle strength
- iv) Limb Length
- v) Trick Movement
- vi) Posture
- vii) Gait
- viii) Special Tests
- ix) Functional Diagnosis using ICIDH-2
- x) X-ray of extremities & spine, routine bio-chemical investigations

## **8] Assessment of Hand**

- i) Sensations
- ii) Mobility of Joints
- iii) Strength
- iv) Special Tests like Froment's Sign, Bunnel – Littler's Test, Phalen's Test, Tinel's Sign, Wartenberg's Sign
- v) Hand Function – Precision & Power Grips

## **9] Assessment of pain**

- i) Intensity & quality
- ii) Objective assessment & documentation – VAS, Mc Gill's modified questionnaire, Numerical Rating Scale

## **10] Assessment of Obesity**

- i) Pathophysiology
- ii) Assessment – BMI, Waist – Hip Ratio, Skin fold Caliper, Girth measurements

## **11] Introduction to Quality Of Life Questionnaire**

## **CLINICALS-**

- 1] Practice of Manual Therapy in Kaltenborn, Maitland, Mulligan & Cyriax on extremities only & only on models
- 2] Electro-diagnostic assessment – S D Curve, Faradic Galvanic Test, Test for Sensory & Pain Threshold, Test for Pain Tolerance to be carried out on relevant patients
- 3] Identification of abnormal breath sounds, measurement of chest expansion, pattern of breathing, Vital parameters, Grades of Dyspnoea, Rate of Perceived exertion, Ankle Brachial Index to be carried out on relevant patients
- 4] Exercise tolerance testing – 6 minutes walk test & Bruce's protocol on models only
- 5] Practice of Neuro Therapeutic Skills of NDT, PNF, Rood's Technique & Brunnstrom on models only
- 6] Interpretation of reports – EMG, NC Studies, ABG, PFT, X-ray of Chest, Extremities & Spine & ECG

## **Term work in Clinical--**

- a] Documentation & Interpretation of following investigations
  - i] Electro diagnosis – 1 each
    - a) SDC
    - b) Faradic Galvanic Test
    - c) Test for Sensory/pain Threshold & Pain tolerance
  - ii] Cardio Vascular & Pulmonary – ABG, PFT, ECG, X-ray Chest, Exercise Tolerance Test – 1 each
  - iii] Neurological – Scales like Modified Ashworth, Berg's Balance, DGI, Glasgow Coma, Barthel Index, STREAM Format – Any 3 & EMG & NC Studies – 2 each
- b] Case presentation with Functional diagnosis - Three cases Each in-
  - i] Musculoskeletal

ii] Neurological

iii] Cardiovascular & Pulmonary

To maintain the Record/Journal of the term work & to get each assignment duly signed by Head

## **TEXT BOOKS**

Maitland's Peripheral Manipulation – Elly Hengeveld

Electrotherapy Explained -Low And Reed

Clinical E.M.G. - Mishra

Manual Mobilization of Joints (Extremities) -Kaltenborn

Cash's Textbook of Neurology for Physiotherapists – Patricia Downie

PNF- H. Kabat

Ortho. Physical Examination - Magee

Physical Rehabilitation – O'Sullivan

Cash's Textbook of Orthopaedics & Rheumatology for Physio Therapists-Patricia Downie

Cash's Text book for Physio Therapists in Neurological disorders – Patricia Downie

Cash's Text book for Physio therapists in Chest, Heart & Vascular diseases - Patricia Downie

Cash's text book in General Medical & Surgical conditions for Physio therapists - Patricia Downie

Brain's disorders of Nervous system – Michael Donaghy

Treatment of C P & Motor delay – by Sophie Levitt

Chest Physical therapy & pulmonary rehabilitation-by Donna Frownfelter

ECG -by P.J. Mehta

## **REFERENCE BOOKS**

Electrodiagnosis in diseases of Nerve and Muscle - Kimura

Ortho physiotherapy - Donatelli

Physiotherapy for Respiratory & Cardiac Problems- Webber & Pryor

Exercise Physiology -McArdle

Muscle Energy Techniques – Chaitow Leon

The Myofascial Release – Carol Manheim

Mobilisation of the Nervous System – David Butler

Textbook of Ortho. Medicine Part I & II – Cyriax

Motor Control – by Shumway Cook

Exercise Physiology -by Mc Ardle

Cardio Pulmonary Physical Therapy – Scot Irwin

## SCHEME OF EXAMINATION-

**THEORY-80 MARKS**  
**IA- 20 MARKS**  
**TOTAL 100MARKS**

**CLINICAL - 80 MARKS**  
**I.A - 20 MARKS**  
**TOTAL -100 MARKS**

Student should get minimum 50% marks for passing the examination

### THEORY

#### Pattern of paper setting-

##### Section-A

**M.C.Q Q-1- Based on single best answer [20 x 1] - (20 minutes)** 20 marks

##### Section-B

**S.A.Q- Q-2]- To answer any Five out of Six—[5 x 3 ]** 15 marks

**Q-3]-to answer any Three out of Four—[3 x 5]** 15 marks

##### #Section-C-

**L.A.Q Q-4] Based on Electrodiagnosis, Therapeutic skills** 15 marks

**Q-5]Based on ICIDH- 2** 15 marks

**OR**

**Q-6]-based on ICIDH-2** 15 marks

#- Each LAQ should give break up of 15 marks-e.g.-[3 + 5 + 7 ] etc

### CLINICAL

#### Pattern of Examination

**A] Long Case -any medical or surgical condition** 35 marks

[Time maximum 30 minutes for student for evaluation]

- i] Psychomotor & affective--skill of History taking [5 marks]
- ii] Skill of clinical examination [10 marks]
- iii] Skill of objective Diagnostic procedure [10 marks]
- iv] Cognitive –Ability to justify bases for functional diagnosis- [10 marks]

#### B] Short Case

**I] Mobilisation Technique (On Models)-** **[10 marks]**

**II] Neuro Therapeutic Skills – NDT / PNF / Rood's / Brunnstrom (On Models)** **[10 marks]**

**OR**

**II] Electro Diagnosis – SD Curve / Faradic Galvanic Test / Test for Sensory & Pain Threshold & Test for Pain Tolerance ( On Patient)** **[ 10 marks]**

**OR**

**II] Exercise Tolerance Test (On Model)** **[ 10 marks]**

**C] Spots- (Five)**

- a] X ray
- b] Pulmonary Function Test
- c] Blood gas analysis
- d] E.C.G.
- e] E.M.G./ N.C. studies

[ 4 x 5=20marks ]

**4] Term work**

5 marks

**INTERNAL ASSESSMENT**

**THEORY**

- 1 Terminal & 1 Preliminary Examination of 80 marks each  
( based on pattern of University examination)

Section A	(20marks)
Section B	(30 marks)
Section C	(30 marks)

**CLINICAL / PRACTICAL**

- 1 Terminal & 1 Preliminary Examination of 80 marks each (based on pattern of University Examination)

Internal Assessments marks should be calculated out of 20 marks in Theory & 20 marks in Clinical/ Practical

**Student will be eligible to appear for University examination if he/ she gets minimum 35% marks.**

## PSYCHIATRY

Didactic	30 hrs
* Clinical	30 hrs
Total	60 hrs

**Objective-** At the end of the course, the candidate will be able to-

- 1] Identify various Psychiatric disorders with special emphasis to movement /Pain & ADL- describe the various causative factors & methods of assessment & management
- 2] Acquire the knowledge in brief about the pathological & etiological factors, signs & symptoms & management of various Psychiatric conditions
- 3] Describe in brief the various treatment modalities commonly used

## Syllabus

- \*1] Psychiatric History & examination of mental status
- 2] Classification of mental disorders
- 3] Psychotic disorders - Schizophrenia & its types in brief, delusional disorder, schizo-affective disorders, post-partum psychosis, mood disorders  
Organic mental disorders, Anxiety disorders, Phobia, Obsessive compulsive disorders, Dissociation Conversion disorder, Hypochondriasis, Post-traumatic disorder, Personality disorder, Substance related disorder, Adjustment & Impulse control disorder, Psycho-sexual disorders, Psycho-Somatic disorder  
Psychiatric emergencies-suicide, Stress management  
Disorders of infancy, childhood & adolescence -disruptive behavior, conduct disorder, attention deficit, hyper-reactivity, eating disorder, tic disorder, elimination disorder, child abuse, enuresis
- 4] Management-ECT, chemotherapy, group therapy, psychotherapy, cognitive behavioral therapy, behavioral therapy

## TEXT BOOKS

- 1] A short book of Psychiatry-3rd edn-by Ahuja- Jaypee bros-medical publishers
- 2] Handbook of Psychiatry by Shah L.P.

## SCHEME OF EXAMINATION

[Theory only]

Student should get minimum 50% marks for passing the examination

<b>THEORY</b>	<b>40</b>	<b>MARKS</b>
<b>I.A</b>	<b>10</b>	<b>MARKS</b>
<b>TOTAL</b>	<b>50</b>	<b>MARKS</b>

### Section- A-

**Q-1-Ten M.C. Q.s based on single best answer** 10 marks  
(10 minutes)

### Section-B

**Q-2 S.A.Q.-**to answer any FIVE out of Six questions[5 x 3 ] 15 marks

### Section-C

**Q-3-S.A.Qs-**to answer any THREE out of Four questions- [3 x5] 15 marks

### INTERNAL ASSESSMENT

10 marks

1 test in Theory

40 marks

1 Clinical test

40 marks

**total 80 marks**

Marks to be calculated out of 10

**Student will be eligible to appear for University examination if he/ she gets minimum 35% marks**

## OBSTETRICS & GYNAECOLOGY

Didactic	20 hrs
Clinical	10 hrs
Total	30 hrs

### Objective

At the end of the course, the candidate will

- 1] Be able to describe the normal & abnormal physiological events during the Puberty, Pregnancy, Labor, Puerperium & Pre, Peri & Post Menopause
- 2] Be able to discuss common complications during Pregnancy, Labour, Puerperium & Pre, Peri & Post Menopausal stage & various aspects of Pelvic floor Dysfunction & the management in brief

### Syllabus-

- 1] Physiology of Puberty & Menstruation, Abnormalities & common problems of Menstruation (2 hrs)
- 2] Pregnancy—Fertilization, Development of the foetus, Normal gestations, Abnormal/Multiple gestations, Common Complications during pregnancy like P I H, Eclampsia, Diabetes, Hepatitis, German Measels, TORCH infection. (3 hrs)
- 3] Labor (4 hrs)
  - i) Normal-Events of I<sup>st</sup>, II<sup>nd</sup> & III<sup>rd</sup> Stages of labor
  - ii) Complications during labor & management
  - iii) Caesarian section
- 4] Post Natal –Puerperium, lactation, Overview of Contraception, Overview of complications of repeated child bearing with small gaps (2hrs)
- 5] Overview of Sterility-management (1 hr)
- 6] Overview of family planning (1 hr)
- 7] Uro-genital dysfunction (3 hrs)
  - i) Uterine prolapse-classification &management (Conservative /Surgical)
  - ii) Cystocele, Rectocele, Enterocoele
- 8] Neoplasm of Female reproductive organs-surgical management (1 hr)
- 9] Pre, Peri & Post Menopause-Physiology, Complications & management (2 hrs)
- 10] Pelvic Inflammatory Diseases with special emphasis to backache due to Gynaec / Obs conditions (1 hr)

### CLINICAL- (10 hrs)

Evaluation & presentation of Two cases Each in

- b) Pelvic floor dysfunction
- c) Antenatal care
- d) Postnatal care
  - i) Following normal labor
  - ii) Following Caesarean section
- d) Pelvic Inflammatory Diseases

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

### TEXT BOOKS

Text Book of Gynaec- Dutta  
Text Book of Obs.- Dutta

## **SCHEME OF EXAMINATION**

THEORY	40 marks
IA	10 marks
TOTAL	50 marks

**Student should get minimum 50% marks for passing the examination**

### **Section-A**

<b>MCQ-Q-1</b> -[MCQs based on Single best answer] (10 minutes)	10marks
--	---------

### **Section-B**

<b>SAQ-Q-2</b> -Answer any FIVE out of Six—[5 x3]	15marks
---	---------

### **Section-C-**

<b>SAQ- Q-3</b> -Answer any THREE out of Four—[3 x 5]	15marks
---	---------

### **INTERNAL ASSESSMENT-**

One theory paper	40 marks
Clinical	40 marks
Total	80 marks

Marks to be calculated out of 10

**Student will be eligible to appear for University examination if he/ she gets minimum 35% marks.**

# COMMUNITY HEALTH /SOCIOLOGY & BIO-STATISTICS

## Section-I

### COMMUNITY HEALTH

Didactic                      5 hrs  
+ Field work                5 hrs

### Objectives-

At the end of the course, the candidate shall be able to understand

1. General concepts of Health & Disease
2. Strategies of Health Delivery System
3. Socio-Economic and Cultural issues related to morbidity
4. Health problems of vulnerable group.
5. Objective methods of family planning
6. Various aspects of Mental Health.
7. Ways of prevention and control of Communicable Diseases.
8. Immunization programme

### Syllabus

- 1] General concepts & Determinants of Health & Diseases – National & International Definition of Health, Role of Socio-Economic & Cultural Environment in Health & Disease-
- a] Epidemiology- Definition & Scope b] Environmental Hygiene including man & his surrounding, Occupational & Industrial hygiene, Village & Town Sanitation, Bacteriology of Water, Milk & Food Hygiene [Overview]
- 2] Overview of Public Health Administration at Central & State levels-Strategies of Health Delivery System for “The Health for All”-National health programme-[brief Role of WHO]
- 3] Health problems of vulnerable groups-
  - i] Pregnant & lactating women, Pelvic floor dysfunction, Urinary Incontinence, Menopausal Women
  - ii] Pre-term babies with high risk, Infants & Pre-School Children, Adolescents, Malnutrition (Rickets
  - iii] Occupational Diseases & Hazards -Definition, Scope, Accident prevention, Hand Injuries, Amputations, Disc Lesions, Head Injuries, Backaches, Respiratory Illnesses due to exposure to asbestoses, tobacco, fumes, COPD, Asthma, Sarcoidosis; Stress
  - iv] Nutritional - Osteomalacia, Rickets, Neuropathies due to Vitamin- deficiency, Skeletal Deformities, Osteoporosis
  - v] Geriatric- Osteoporosis, Malnutrition, Alzheimer’s disease, Parkinson’s, Ataxia, IHD, Hypertension, Diabetes mellitus, Obesity
  - vi] Addiction-Alcoholic - Neuromotor & Psychosomatic disorders, Smoking-asthma, COPD
- 4] Family planning-objectives of National Family Planning Programmes & Family Planning Methods-

General Idea of Advantage & Disadvantage of the Methods
- 5] Mental health- socio-economical & cultural aspect
- 6] Communicable and Non-communicable diseases-an overview [including prevention & control] - TB, HIV, Polio, Acute Respiratory Tract Infection, Leprosy, Brucellosis & Other conditions leading to Paralysis & Arthritis
- 7] Immunization programmes -children & hospital staff
- 8] National Health Programme -Brief review

## **Text Books**

- 1] Park's Textbook of Preventive & Social Medicine - K. Park
- 2] Textbook of Preventive & Social Medicine - P.K. Mahajan & M.C. Gupta

## **Section-II**

### **BIOSTATISTICS**

**[30 hours]**

#### **Objectives-**

At the end of the course, the candidate shall

- 1] gain knowledge of the basic concepts of Biostatistics & its need for professional practice & Research
- 2] be able to describe an Over-view-
  - a] Ethnography & Anthropology
  - b] Design & Methodology of an Experiment or Survey
  - c] Demography & vital statistics
  - d] Sampling & interpretation of Data

#### **Syllabus-**

- 1] Introduction-Uses of Statistical Methods in Physiotherapy –Measurement Scales, Variables & their Measurements, Symbolic Data, Operations
- 2] Statistical data-Tabulation, Calculation of Central Tendency & Dispersion, Linear Regression & Correlation –Presentation of Data in Diagrammatic & Graphic Form
- 3] Probability & Sampling as a Mathematical System, Population & Samples, Sampling Distribution, Sampling Methods

#### **Text Books –**

- 1] Methods in Biostatistics - B.K. Mahajan

## **SECTION-III**

### **SOCIOLOGY**

**[25 hrs]**

#### **Objectives:**

At the end of the course, the candidate shall be able to understand

1. Influence of sociology on Health
2. Concept of Socialization, Social Groups, Family Influence, Community Influence, Cultural Influence and Caste system.
3. Concept of Social Changes, Social Control, Social Problems, Social security and Social legislation.
4. To understand the role of social worker

#### **Syllabus-**

- 1] Introduction-Definition & Relevance with Physio Therapy
- 2] Sociology & Health-Social factors affecting Health Status, Social Consciousness & Perception of Illness, Decision Making in Treatment
- 3] Socialization-Definition, Influence of Social Factors on Personality, Socialization in the Hospital & Rehabilitation of the patients
- 4] Social groups-Concepts, Influence of formal & informal groups on Health & Diseases, Role of Primary & Secondary Groups in the Hospital & Rehabilitation Setting

- 5] Family-Influence on human personality, Individual Health, Family & Nutrition, Effects of Sickness on Family Psychosomatic Diseases & Family
- 6] Community-Role of Rural & Urban communities in Public Health, Role of community in determining Beliefs, Practices & Home Remedies in Treatment.
- 7] Culture-Components Impact on Human Behavior, Cultural Meaning of Sickness, Response to Sickness & Choice of Treatment, [Role of Culture as Social Consciousness in moulding the Perception of Reality] Culture induced Symptoms & Diseases, Sub-Culture of Medical Workers
- 8] Caste systems—Features of Modern Caste Systems & its Trends
- 9] Social change- Human Adaptation, Stress, Deviance, Health programme, Role of Social Planning in the improvement of Health & in Rehabilitation
- 10] Social Control-Definition, Role of norms, Folkways, Customs, Morals, Religion, Law & other means of social controls in the regulation of Human Behavior, Social Deviance & Disease
- 11] Social problems of the Disabled-Consequences of the following social problems in relation to sickness, disability, remedies to prevent these problems-
  - a] Population Explosion
  - b] Poverty & Unemployment
  - c] Beggary
  - d] Juvenile Delinquency
  - e] Prostitution
  - f] Alcoholism
  - g] Problems of Women in Employment
- 12] Social Security & Social Legislation in relation to the Disabled
- 13] Role of a Social Worker

#### **TEXT BOOKS**

- 1] An introduction to sociology- Allahabad; kitab mahal ltd,1974 - Sachdeva & Bhushan
- 2] Indian social problems, Vol-I-Madras-Allied publications-1973 - Madan

## **SCHEME OF EXAMINATION**

THEORY	80 marks
IA	20 marks
TOTAL	100 marks

**Student should get minimum 50% marks for passing the examination**

### **Section-A**

#### **MCQ-**

Community Health - 10marks – M.C. Q-Single best answer	20 marks
Biostatistics – 5 marks – M.C.Q. - Single best answer	
Sociology – 5 marks – M.C.Q. - Single best answer	(20 minutes)

### **Section-B**

Based on Community Health

<b>SAQ-Q-2</b> –Answer any 5 out of 6—[5 x3]	15marks
--	---------

<b>SAQ- Q-3</b> -Answer any 3 out of 4—[3 x 5]	15marks
--	---------

### **Section-C-**

<b>SAQ-Q-4</b> -Answer any 3 out of 4 (based on Biostatistics) — [3 x 5]	15marks
--	---------

<b>SAQ- Q-3</b> -Answer any 3 out of 4(based on Sociology) — [3 x 5]	15marks
--	---------

### **INTERNAL ASSESSMENT-**

1 Terminal & 1 Preliminary Examination of 80 marks each as per pattern of University examination.

Internal assessment marks should be calculated out of 20 marks

### EXAMINATION PATTERN OF B.P.T.-III

Sr. No	Name	Theory	Duration	I.A.	Total	Clinical	I.A	Total
1	Surgery- 1. Gen. Surgery 2. Orthopadeics	40 40	3 hours	20	100	-	-	-
2	Medicine 1. Medicine [Cardiovascular & Respiratory] 2. Neurology	40 40	3 hours	20	100	-	-	-
3	Obstetrics And Gynaecology	40	2 hours	10	50			
4	Physical Diagnosis & Therapeutic Skills	80	3 hours	20	100	80	20	100
5	Community Health/ Biostatistics /Sociology	80	3 hours	20	100			
6	Psychiatry	40	2 hours	10	50	-	-	-

**Passing Criteria – 50 % of total marks each in theory & practical**  
**Eligibility to appear for University exam – 35 % in Internal Assessment.**

# **PADMASHREE DR. D. Y. PATIL UNIVERSITY**

## **COURSE – PHYSIOTHERAPY**

### **DEGREE CONFERRED – B.P.T.**

#### **-----IV B.P.T.-----**

**[This syllabus is applicable from 2007-2008, i.e.-from the batch who gets admitted to the I B.P.T. course in 2004-2005]**

#### **Subjects-**

#### **Transcript Hours-1400**

- |   |         |
|---|---------|
| 1] Musculoskeletal Physiotherapy -----                            | 135 hrs |
| 2] Neuro- Physiotherapy -----                                     | 135 hrs |
| 3] Cardiopulmonary and Integumentary Physiotherapy -----          | 135 hrs |
| 4] Physiotherapy in Community Health -----                        | 145 hrs |
| 5] Principles of Bio-engineering-----                             | 30 hrs  |
| 6] Professional issues / Administration/Management/Marketing----- | 40 hrs  |
| 7] Seminar-----   | 34 hrs  |
| [Including Case presentation-17 hrs + Literature review-17 hrs]   |         |
| 8] Supervised clinical practice + Project-----                    | 746 hrs |
- Clinical assignments shall be of 100 hours at Indoor & 100 hours at the Outdoor section respectively in Each of the subjects mentioned in 1,2,& 3 above.  
Clinical assignment in subject 4] mentioned above shall be of 146 hours including 66 hrs in clinical assignments & 80 hrs for project
- A] During each clinical assignment, the student shall functionally diagnose, plan & practice Clinical skills on patients in consultation with the experienced senior staff.
- B] During each clinical assignment He /she shall maintain a separate File /journal for each subject & keep all the records of the Clinical assignment & Ward exam,/Seminar etc in the respective file. However the records of the Project work in the subject of PT in Community Health shall be maintained in the file titled as "PROJECT FILE" The candidate shall get the clinical & project work duly verified with the signature from the Head at the end of each respective assignment

# MUSCULOSKELETAL PHYSIOTHERAPY

Didactic	40 hrs
* Clinical	95 hrs
Total	[135 HRS]

## Objectives-

This course is formulated on the "Problem based learning" method.

At the end of the course, the candidate will-

- 1] Be able to identify, discuss & analyse, the Musculoskeletal Dysfunction in terms of Biomechanical, Kinesiological & Biophysical bases & correlate the same with the provisional diagnosis, routine radiological & electrophysiological investigations & arrive at appropriate Functional Diagnosis with Clinical Reasoning.
- 2] Be able to plan & prescribe as well as acquire the skill of executing short & long term Physio Therapy treatment by selecting appropriate modes of Mobilisation / Manipulations, Electro Therapy, Therapeutic exercises & appropriate Ergonomic Advise for the relief of pain, restoration /maintenance of function & rehabilitation for maximum functional independence in A.D.L at home & work place.

## Syllabus

Following topics are applicable to All the Musculoskeletal conditions (Adult & Paediatric) included in the various clinical subjects of Medical Sciences taught in III B.P.T. course.

- 1] Evaluation, interpretation of investigations & functional diagnosis with appropriate clinical reasoning for planning & implementation of management techniques.
- 2] Planning, Prescription & Implementation of short term & long term goals with clinical reasoning.
- 3] Documentation
- 4] Application of appropriate electro therapeutic modes for relief of acute & chronic pain & swelling; wound healing, re-education etc with clinical reasoning
- 5] Application of Simple therapeutic modes for muscle strength & joint mobility
- \*6] Application of Advanced therapeutic modes of mobility like Mobilisation Techniques [Techniques covered in III<sup>rd</sup> B.P.T.], Friction Massage, Myofascial Release, Muscle Energy Techniques & Neuro Dynamic Techniques on patients.
- 7] Application of various taping methods for support & relief of pain
- 8] Posture Correction & Gait Training
- 9] Prescription of appropriate orthotic & prosthetic devices & fabrication of simple temporary splints
- 10] Application of appropriate Therapeutic exercises using therapeutic gymnastic tools as and when necessary, for the relief of pain, structural stability, strength & endurance & functional restoration including gait training and exercises for the preventive measures.
- 11] Appropriate Home Programme & Ergonomic advise for preventive measures & functional efficiency at home & work place, advice to Parents & Care Givers .

\* All the advanced therapeutic modes of mobility should be applied only on extremities.

## Upper Extremity [U.E]

- a) Fracture and Dislocations – surgically managed (internal fixation, external fixation, arthroplasty, osteotomy) conservatively managed, management of complications
- b) Brachial plexus injuries and peripheral nerve injuries in U.E.
- c) Soft tissue involvement – conservatively managed, surgically managed
- d) Mastectomy, management of tumor in U.E.
- e) Amputations
- f) Sports/ Overuse injuries
- g) Crush injuries
- h) Deformities

## **Lower Extremity [L.E]**

- a) Fracture and Dislocations – surgically managed (internal fixation, external fixation, arthroplasty, osteotomy) conservatively managed, management of complications
- b) Lumbosacral plexus injuries and peripheral nerve injuries in L.E.
- c) Soft tissue involvement – conservatively managed, surgically managed
- d) Management of tumor in L.E.
- e) Amputations
- f) Sports/ Overuse injuries
- g) Deformities – congenital, acquired

## **Spine**

### **Cervical -**

- a) Fracture and Dislocations – surgically or conservatively managed, management of complications
- b) Soft tissue involvement – conservatively managed, surgically managed
- c) Torticollis
- d) Radiculopathy and Myelopathy
- e) Deformities – congenital, acquired
- f) Mechanical pain
- g) T. M. joint syndrome
- h) Thoracic Outlet Syndrome

### **Thoracic –**

- a) Fracture and Dislocations – surgically or conservatively managed, management of complications
- b) Soft tissue involvement – conservatively managed, surgically managed
- c) Radiculopathy and Myelopathy
- d) Deformities – congenital, acquired

### **Lumbosacral –**

- a) Fracture and Dislocations – surgically or conservatively managed, management of Complications
- b) Disc prolapse – surgically or conservatively managed, management of complications
- c) Lysis, Listhesis
- d) Mechanical pain
- e) SI joint dysfunction

## **General**

- a) Degenerative conditions – in upper. lower extremity and spine
- b) Rheumatic conditions – R.A., S.L.E., Ankylosing spondylitis, etc.
- c) Common Gynaecological surgeries, Pelvic floor dysfunction ( prolapse, incontinence)
- d) Pelvic surgery and abdominal surgery
- e) Reconstructive surgery in Polio and C.P.
- f) Reconstructive surgery for bone lengthening
- g) Complex Regional Pain Syndrome (CRPS)
- h) Vascular disorders affecting musculoskeletal structure – Compartment Syndrome, AVN, Perthe's disease, Hemophilia etc.
- i) Infectious and Inflammatory disease of bones and joints – Tuberculosis, Osteomyelitis, etc.
- j) Metabolic condition – Osteoporosis, Osteopenia, Osteomalacia

## **CLINICAL-**

Evaluation, Treatment Planning, Documentation & Presentation of Minimum two cases each in-1]-# / dislocation -upper Limb [including hand], 2]-# / dislocation -lower limb [including foot], 3] Soft tissue injuries 4]-# / dislocation spine with /without Neurological deficit 5] General

### Textbooks:

1. Cash's Textbook of Orthopedics & Rheumatology for PTists – Patricia Downie
2. Therapeutic exercise – Kisner
3. Essentials of Orthopedics & Applied Physiotherapy – Jayant Joshi
4. Physical Rehabilitation – O'Sullivan
5. Manual Mobilisation of extremity joints- Freddy Kalterborne
6. Orthopedic Physical Therapy – Donatelli
7. Neural tissue mobilization – Butler
8. Manual Therapy – Maitland
9. Manual of Myofascial Release – Carol Manhein
10. Muscle energy techniques – Leon Chaitow
11. Taping Tech - Mac Donald Rose
12. Essentials of Orthopedics for PTists- Ebnezer
13. Calliet series
14. Clinical Ortho Rehab - Brotzman

### Reference Books:

1. Sports Physiotherapy - M. Zuluaga
2. Therapeutic Exercise - Carrie Hall & Brody
3. Rehab Medicine-Part I/II - Delisa
4. Atlas of Orthotics - AAOS
5. Orthotics and Prosthetic in Rehab - Lusardi
6. Hand Rehab - James Hunter
7. Campbell Operative Orthopedics- Canale Vol 1-4
8. Orthopedic Principles and their Applications- Turek Vol 1,2
9. Kinesiology - Carol A. Oatis

## NEURO PHYSIO THERAPY

<b>Didactic</b>	<b>40 hrs</b>
<b>Clinical</b>	<b>95 hrs</b>
<b>Total</b>	<b>135 hrs</b>

### Objectives

At the end of the course, the candidate will –

- 1] Be able to detect abnormalities in neurodevelopment.
- 2] Be able to assess, identify & analyze neuro-motor & psychosomatic dysfunction in adult & paediatric & co-relate the finding with provisional diagnosis, interpretation of routine neurological investigations & arrive at functional diagnosis with clinical reasoning
- 3] Be able to understand the principles & acquire Neuro therapeutics skills
- 4] Be able to plan, prescribe & execute short term & long term goals with appropriate therapeutic interventions & be able to modify treatment techniques according to stage of disease.

### Syllabus-

Following topics are applicable to all the Neurological conditions (Adult & Paediatric) included in the various clinical subjects of Medical Sciences taught in II & III B.P.T. course.

- 1] Understanding theories of motor control & motor learning
- 2] Understanding sensory system & organization of sensory strategies for efficient motor output.
- 3] Skills of sensory-motor learning & neuro-muscular skeletal training

### A) Paediatric

- 1] Detection of abnormalities in Neurodevelopment in terms of Maturational Reflexes, Reactions, Tone, Movement, Motor & Mental age, Posture, Balance & Locomotion & to identify Primary & Secondary dysfunction
- 2] To define & describe different types of Cerebral Palsy & their related disability & plan & implement appropriate \*treatment programme – a) NDT b) Principles of Sensory Integration c) MFR d) Rood's Technique
- 3] Plan & implement appropriate \*treatment programme for spinal dysraphism., hydrocephalus, meningitis & encephalitis with reference to sensory care, motor training, bladder training, prevention & treatment of deformities, balance training, orthotic & adaptive devices.
- 4] Plan & implement appropriate treatment for muscular dystrophies / atrophies, poliomyelitis with reference to strengthening exercises, stretching, splinting, recreation, home adaptations, school, lifting techniques, prolongation of ambulation, wheel-chair modification & adaptive devices.

### B) Adult

- 1] Planning short term & long term goals & formulating \*treatment programme for all the topics given as follows-
  - a] Hemiplegia
  - b] Cranial nerves-emphasis on 5th & 7th & 8th nerves
  - c] Disorders of circulation & space occupying lesions - Cortical, Cerebellar, Thalamic, & Brain-stem
  - d] Head injury
  - e] Demyelinating diseases of the nervous System-Multiple sclerosis
  - f] Lesions of Extra-pyramidal system & Basal ganglia-Parkinsonism, Chorea, Athetosis, Dystonia, Spasmodic torticollis, Cerebellar Ataxia, etc.
  - g] Degenerative disorders- M.N.D., Hereditary Ataxia, Peroneal muscular atrophy, S.M.A, Alzheimer's Disease
  - h] Disorders of spinal cord-paraplegia, syringomyelia, Transverse myelitis
  - i] Polyneuropathy-Sub-acute combined degeneration, G B Syndrome, Alcoholic & Diabetic neuropathy
  - j] Disorders of peripheral nerves - tumours, infective & metabolic lesions of nerves

k] Disorders of voluntary muscles-Dystrophies, Atrophies, & Neuro-muscular junction disorders

l] Psycho-somatic Pain

m] Infective disorders of Nervous System – Tetanus, Tabes Dorsalis, Meningitis, Encephalitis , Leprosy

\* Treatment programme includes

- a) Application of appropriate Electro-therapeutic modes for relief of pain & functional restoration
- b) Application of neuro therapeutic skills like PNF, NDT, Carr & Shepherd, Brunnstrom & Rood's
- c) Co ordination & balancing exercises by using techniques based on neuro physiological principles
- d) Tools used for neuro rehabilitation like vestibular balls, tilt board etc.
- e) Application of transfer & functional re-education exercises, postural exercises & gait training
- f) Bladder training
- g) Developing a philosophy for caring
- h) Prescription for appropriate orthotic devices & fabrication of temporary splints.
- i) Ergonomic advice for prevention / rehabilitation & parents / care givers' education about handling of a patient
- j) Applied psychology for physiotherapists

## **CLINICAL-**

Evaluation & treatment planning; documentation & presentation of minimum Four cases Each in-1]- Paediatric neuro case 2] U.M.N.lesion ( Adult) 3] L.M.N. lesion (Adult)

### Textbooks:

1. Cash's Textbook for Physiotherapists in Neurological conditions- Patricia Downie
2. Physical Rehabilitation – O'Sullivan
3. Steps to follow – Patricia Davies
4. Motor Control theory& practical Application- Shumway Cook
5. Treatment of CP & motor delay - Sophie Levitt
6. Neurological Rehab – Darcy Umphred
7. Normal Child –Illingworth

### Reference Books:

1. Stroke Rehab – Margaret Johnstone
2. Brains diseases of Nervous system - Michael Donaghy
3. PNF in practice– Adler
4. Right in the Middle- Patricia Davies
5. Optimizing motor control – Carr & Shepherd
6. Adult Hemiplegia – Bobath
7. Starting again – Patricia Davies
8. Spinal cord injury - Buchanan
9. Tetraplegia & Paraplegia- Ida Bromley
10. Rehab Medicine-Part I/II - Delisa

# **CARDIOPULMONARY & INTEGUMENTARY PHYSIO THERAPY**

**Didactic 40 hrs**  
**Clinical 95 hrs**  
**Total 135 hrs**

## **Objectives**

At the end of the course, the candidate will -

- 1] Identify, discuss & analyze cardio-vascular & pulmonary dysfunction in adult & pediatric, based on Biomechanical & Patho-physiological principles & arrive at the appropriate functional diagnosis
- 2] Acquire knowledge of rationale of basic investigative approaches in the medical system & surgical intervention regimes related to cardio-vascular & pulmonary impairment & peripheral vascular conditions
- 3] Acquire the skill of evaluation & interpretation of functional capacity.
- 4] Be able to select strategies for cure, care & prevention; adopt restorative & rehabilitative measures for maximum possible functional independence of a patient at home, work place & in community.
- 5] Be able to execute the effective Physio Therapeutic measures in adult & pediatric with appropriate clinical reasoning to improve pulmonary function.
- 6] Be able to design & execute effective tailored cardiac rehabilitation programme.
- 7] Acquire knowledge of the overview of patients care at the Intensive care area.
- 8] Acquire knowledge of different integumentary conditions and methods of skin care.
- 9] Be able to execute the effective Physio Therapeutic measures in adult & pediatric condition with appropriate clinical reasoning .

## **Syllabus-**

The following topics are applicable to all the adult & paediatric cases related to general surgical & medical conditions included in the Clinical subjects of III B.P.T. programme.

- 1] Physical Assessment
- 2] Interpretation of radiological & routine biochemical investigations & co-relate the same with clinical findings
- 3] Functional diagnosis
- 4] Functional Capacity
- 5] Planning short & long term goals with clinical reasoning for the following
  - a) Cardiac Disorders – Conservatively & Surgically managed (Congenital, Acquired, Rheumatic, Rhythm, Disturbances. IHD, Post Cardio-thoracic surgeries)
  - b) Pulmonary Disorders - Conservatively & Surgically managed (Obstructive, Restrictive, Occupational & Pediatric)
  - c) Pre and Post operative chest care
  - d) Peripheral Vascular Diseases (including amputation)
  - e) Diabetes ( Wounds, Ulcer, Glycaemic control with exercises)
  - f) Intensive Care Unit – Suctioning, Measures to improve bronchial hygiene, Positioning for bronchial hygiene, Continuous monitoring of patients and General Mobilisation

- g) Integumentary conditions – Vitiligo, Psoriasis, Acne, Alopecia, Scleroderma, Burns, Scar management, Wound healing and Skin care in neurogenic conditions
- 6] Application of appropriate skills for breathing re-training & bronchial hygiene as preventive [used specifically in preoperative care], restorative & rehabilitative measures.
- 7] Prescription of appropriate therapeutic exercise programme for conditioning
- 8] Prescription of home programme & ergonomic advice / parents education in case of Paediatric cases with reference to energy cost.
- 9] Importance of life style modification in prevention of IHD.
- 10] Use, application of electro therapeutic modalities for relief of pain, swelling & wound healing.
- 11] Familiarization with concept of Quality of life.

### **CLINICAL-**

- 1] Skill to assess Cardiac & Pulmonary dysfunction – heart rate, pulse [quality, rate, rhythm & volume], B.P. measurement - Physiological variation, Ankle-Brachial Index, chest expansion and excursion, Skill of exercise testing – a) 6 minute walk test b) symptom limited
- 2] Interpretation of
  - a) Treadmill & Ergo-cycle test findings
  - b) ECG.-I.H.D.
  - c) Biochemical analysis-serum enzymes, C.P.K levels, L.D.H., S.G.O.T., S.G.P.T, Lipid profile, electrolyte balance
  - d) Chest X-ray
  - e) P.F.T.-obstructive/ restrictive/reversibility
  - f) A.B.G.
  - g) R.P.E.-Borg`s scale
- 5] Evaluation & treatment planning, documentation & presentation of ONE case each in-
  - a] Pulmonary Medical condition
  - b] Pulmonary Paediatric condition
  - c] Pulmonary Surgical condition
  - d] Cardiac Medical condition
  - e] Cardiac Surgical condition
  - f] Peripheral Vascular Disorders
  - g] Amputation
  - h] Wound
  - i] Burns
  - j] Dermatological conditions

### Textbooks:

1. Cash's Textbook for Physiotherapists in Chest, Heart & Vascular diseases – Patricia
2. Cash's Textbook in Gen. Medical & Surgical conditions – Patricia Downie
3. Chest Physical Therapy & Pulm. Rehab – Donna Frownfelter
4. Pulmonary Physiotherapy – Hass
5. Exercise Physiology - Mc Ardle
6. Physical Rehab – O'Sullivan
7. Exercise testing & Exercise prescription for special cases - J. Skinner
8. PT for Resp & cardiac problems - Pryor & Prasad
9. Cardiopulmonary physical Therapy - Irwin Scott

Downie

### Reference Books:

1. ECG – P.J. Mehta
2. Mechanical Ventilation – Pierce
3. Braunwald's heart disease - Libby, Peter
4. ACSM (set of 3 books)
5. Rehab Medicine-Part I/II - Delisa

## PHYSIO THERAPY IN COMMUNITY HEALTH [145 hrs]

COMMUNITY HEALTH & C.B.R.  
HEALTH PROMOTION  
WOMAN & CHILD CARE  
GERIATRIC HEALTH  
INDUSTRIAL HEALTH

Didactic-05 hrs  
Didactic-10 hrs + clinical-25 hrs  
Didactic-10 hrs +clinical -25 hrs  
Didactic-10 hrs+clinical -25 hrs  
Didactic-10 hrs+clinical+25 hrs

**Objectives-**At the end of the course, the candidate will-

- A] be able to describe
  1. the general concepts about Health, Disease & Physical fitness
  2. National policies for the rehabilitation of disabled – role of IAP to promote physiotherapy as a health delivery system
  3. 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. the evaluation of disability & planning for prevention & rehabilitation
  5. C.B.R.- in urban & rural set up, WHO policies, concept of team work, role of multi- purpose health worker
- B] be able to 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
  1. Woman & Child care - altered mechanics and Physiological function due to pregnancy, labor and parity, menopause,menarche, Nutritional Problems, Care of pre-term babies and adolescent age group
  2. Geriatrics - physiology of aging & its influence on physical fitness
  3. Industrial health - Accidents and Hazards
  4. Health promotion – role of PT in health for all
- C] be able to conduct a project (Retrospective/ survey ) – collection of anthropometric data for morbidity assessment in various conditions, Interpretation and advise with clinical reasoning at Urban / Rural Community or Institutional level

### Syllabus-

- 1] Concepts of community health [preventive, promotive, restorative and rehabilitative]
- 2] WHO definition of health and disease
- 3] Health delivery system – 3 tier
- 4] Disability types (Physical & Psychological) , evaluation, prevention & Legislation related to Persons With Disability (PWD)
- 5] 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 PT in team, concept of multi -purpose health worker, Role of PT and strategies in 3 tier Health delivery system, Communication Strategies.

6] Health Care -

Prevention, Promotion & Restoration

- I. In Peri Pubertal age group
- II. In women-pregnancy, menopause
- III. In Geriatrics- neuromusculoskeletal, Cardiovascular, Pulmonary, metabolic and degenerative conditions
- IV. In Obese / Over weight
- V. In Cardiovascular and Pulmonary conditions
- VI. In Diabetes
- VII. In Sport Person (Identify risk factor & type of training)
- VIII. For Health Promotion for All

7] Woman and child care -

- I. Antenatal exercises , Specific Breathing exercises, Relaxation, Postural Training, Pelvic floor stretching and strengthening exercises with clinical reasoning
- II. Physiotherapy during labor
- III. Postnatal exercises program after normal labor / labor with invasive procedures with clinical reasoning
- IV. Menopause -Osteoporosis , Mental health , Physiotherapy management
- V. Preterm babies
- VI. Adolescent age group
- VII. Nutritional disorders in women and children

8] Geriatrics –Physiology of Aging, Environmental changes and adaptations, Balance and falls, Physiotherapy management, Role of Physiotherapy in prolonged bed rest and in home for aged

9] Industrial health -

I. Ability Management -

Job analysis: - Job description, Job demand Analysis, Task Analysis,  
Ergonomic Evaluation including Anthropometric data collection,  
Injury Prevention, Employee Fitness Programme

Disability Management:- Acute care, Concept of Functional Capacity  
Assessment, Work Conditioning, Work Hardening

II. Environmental stress in the industrial area -

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

Mechanical stresses in -

- i. Sedentary table work – executives, clerks
  - ii. Vehicle drivers - Inappropriate seats, Vibrations
  - iii. Constant standing-watchmen, defense forces, surgeons etc.
  - iv. Labourers- Overexertion
- D. Psychological hazards- monotonicity and dissatisfaction in job, anxiety of work completion with quality, Multi-task activities,

III. Preventive and Rehabilitative Role of PT in II A, B,C & D

## CLINICAL:

Visits to Urban Health Centre & Primary Health Centre.

Project – Survey/Retrospective study in community

Documentation of 2 cases each in a) Women's Health b) Geriatrics & c) Industrial Health (Musculoskeletal / Pulmonary conditions)

d) Health promotion – 1 case each in i) Obesity ii) Peri-pubertal age group iii) Sports person  
iv) Diabetes / Cardio-Pulmonary conditions

**Textbooks:**

1. Therapeutic exercise – Kisner
2. Industrial Therapy – Glenda Key
3. Textbook of Comm. Med & Comm.Rehab - Bhasker Rao
4. Geriatric Physical therapy - Andrew Guccione
5. ACSM (set of 3 books)
6. P.S.M. - Park
7. Textbook of Women's Health – Ruth Sapsford
8. Legal Rights of Disabled – RCI
9. Locomotor disabled - RCI

**Reference Books:**

1. Physiotherapy in obstetrics & Gynecology -J. Mantle
2. Textbook of Work Physiology – Astrand
3. Exercise Physiology - Mc Ardle
4. Ergonomics: Man in working environment – Mural
5. Ergonomics- Karen Jacobs
6. Occupational disorders – Hunter
7. Occupational injuries – Herrington
8. Msk disorders in the work place – Nordin
9. Textbook of preventive & Social Med – Gupta & Mahajan
10. Exercise testing & Exercise prescription for special cases - J. Skinner
11. Sports Injuries - Zuluaga
12. Methods in Biostatistics – Mahajan
13. Rehab Medicine-Part I/II - Delisa

## SCHEME OF EXAMINATION

SUBJECTS— [All the following subjects shall follow the same patterns of examination]

### 1] PHYSIOTHERAPY IN MUSCULOSKELETAL CONDITION

#### 2]-----DO-----NEUROSCIENCES

#### 3]-----DO-----CARDIOPULMONARY & INTEGUMENTARY CONDITIONS

THEORY-80 MRKS; I.A.-20 MARKS; TOTAL =100MARKS

CLINICAL-80 MARKS; I.A -20 MARKS TOTAL =100MARKS

### 1]-THEORY-Pattern of Paper setting

**80 marks**

#### Section-A-

M.C.Q Q-1].-[20 X 1] Single best answer

20 marks

#### Section-B

S.AQ.- Q-2 ]-To answer any FIVE out of Six—[5 x 3]

15 marks

- Q-3 ]-To answer any THREE out of Four-[3 x5 ]

15 marks

#### Section-C

L.AQ-.Q-4 ]

15 marks

Q-5]

15marks

OR

Q-6 ]

15 marks

### CLINICAL

**80 marks**

1] One Long case

35marks

[Time-not more than-30 minutes for Student & 15 minutes for examiner]

[Psychomotor & Affective-skill during Clinical examination & Skill of

objective assessment ,correlating with other investigations

15 marks

+ Demonstration of appropriate treatment skill [e.g.Manipulative skill ]

10 marks

+ Cognitive ability of Clinical decision making, Planning Short & long

term goals with scientific justification

10 marks

2] One short case –based on Planning of treatment

20 marks

[Time-Not more than 15 minutes for student + 10 minutes for the examiner]

3] Spots-[Four]-.-Electrodiagnosis , simple X-rays , Orthotic- Prosthetic

device, P.F.T.,A.B.G ,Lipid profile, ECG, Scales etc-----

20 marks

[5x4]

4] Documentation 5 marks

### 4] PHYSIOTHERAPY IN COMMUNITY HEALTH

THEORY-80 MRKS; I.A.-20 MARKS; TOTAL= 100 MARKS

CLINICAL-80 MARKS; I.A -20 MARKS TOTAL=100 MARKS

### 1] THEORY-Pattern of Paper setting

**80 marks**

#### Section-A

M.C.Q Q-1].-[20 X 1] Single best answer

20 marks

#### Section-B

S.AQ.- Q-2] To answer any FIVE out of Six—[5 x 3]

15 marks

Q-3]-To answer any THREE out of Four-[3 x5 ]

15 marks

#### Section-C

L.AQ-.Q-4]

15 marks

Q-5]

15marks

OR

Q-6]

15 marks

**CLINICAL**

- a] A Long Case [ patient or simulated ] of 35 marks must be based on Women's Health/ Geriatrics/ Health Promotion / Industrial Health
- b] Project presentation 40marks [15 marks for content + 10 marks for audiovisual + 15 marks for question answers ]
- c] Documentation 5 marks

**INTERNAL ASSESSMENT**

20 marks

One terminal & one preliminary exam. Of 80 marks each in Theory & Clinical.

Marks to be calculated out of 20 each in Theory & Clinical.

Student will be eligible to appear for University examination if he/ she gets minimum 35% marks

- 1] The Theory examination will be as per University pattern
- 2] Clinical examination for the three subjects i.e. Musculoskeletal P.T., Neuro P.T. & Cardiopulmonary & Integumentary P.T. – 1 Terminal & 1 Preliminary examination of 80 marks each as per University pattern.

Clinical. exam. for P.T. in Community Health shall include 2 Case presentations in Terminal & Preliminary examination each of 40 marks. Topics are as follows:

Terminal (80 marks)

- a] Woman and child care
- b] Geriatrics

Preliminary (80 marks)

- a] Industrial Health
- b] Health promotion

## PRINCIPLES OF BIOENGINEERING

Didactic 20 hrs  
Practical/Laboratory-10 hrs

### Objectives-

At the end of the course, the candidate shall

- 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/orthoses & prostheses and selection criteria for the aid
- 3] acquire the skill of fabrication of simple splints made out of low cost material

### Syllabus—

- 1] Classification of Aids & Appliances
- 2] Biomechanical principles in designing of appliances & assessment procedures for static & dynamic alignment of the following Aids & Appliances - Splints /Orthoses for spine and upper & lower extremities/ Prostheses for Upper and Lower limbs
- 3] Project- Following temporary splints to be fabricated by using P.O.P/ aluminum strips /sheets /wires / rubber bands / rexin / Orfit etc
  - I. cock up [dorsal/volar,
  - II. outrigger,
  - III. Opponens splint
  - IV. Anterior and posterior guard splints,
  - V. Foot drop splint
  - VI. Facial splint
  - VII. Mallet Finger Splint
  - VIII. C bar for 1st web space of hand

### Textbooks:

1. Atlas of Orthotics - AAOS
2. Orthotics and Prosthetic in Rehab - Lusardi

### Reference Books:

1. Hand Splinting - Wilton

## SCHEME OF EXAMINATION-\*[COLLEGE EXAMINATION ]

THEORY- 20 MCQs, 20 MARKS (20 Minutes)  
PROJECT- 30 MARKS  
TOTAL - 50 MARKS

# **PROFESSIONAL ISSUES /ADMINISTRATION /MANAGEMENT& MARKETING**

**[40hrs]**

## **SECTION-I-PROFESSIONAL ISSUES**

**20 hrs**

### **Objectives**

This course is aimed to enable the candidate to acquire the knowledge of ethical code of professional practice as well as its moral & legal aspects & role of WHO & WCPT

**Contents-** 1] Concepts of Morality, Ethics & Legality, rules of professional conduct & Medico- legal & moral implications, The need of Council Act for Physiotherapy  
2] Constitution & Functions of the Indian Association of Physiotherapists  
3] Functioning of the World Confederation of Physical therapy [WCPT] & its various branches, Special Interest groups in brief  
4] Role of WHO & WCPT

## **SECTION-II-ADMINISTRATION/MANAGEMENT & MARKETING-**

**20 hrs**

### **Objectives**

At the end of the course the student will acquire the knowledge of the basics in Managerial & Management skills, use of Information Technology in professional Practice

### **Contents-**

1] Management studies related to local health care organization, Management & Structure, Planning delivery with quality assurance & funding of service delivery, Information Technology, Time Management ,Career development in physiotherapy  
2] Administration-principles based on the Goal & Functions at large hospital set up / domiciliary services/ private clinic /academic institute  
3] Methods of maintaining records  
4] Budget planning  
5] Performance analysis -physical structure, reporting system[man power, status functions , quantity & quality of services, turn over , cost benefit, revenue contribution

### **Textbooks:**

1. Textbook of management- Philip Kotler

## SCHEME OF EXAMINATION-

\*[COLLEGE EXAMINATION ]

TIME-2 hrs

**THEORY - SECTION I -25 MARKS + SECTION II-25 MARKS =50 MARKS**

### PATTERN OF EXAMINATION---IV B.P.T.

Sr. No	Subject	Theory	IA	Total	Clinical	IA	Total
<b>1</b>	P.T.in Musculoskeletal conditions	80	20	100	80	20	100
<b>2</b>	P.T. in Neuro-sciences	80	20	100	80	20	100
<b>3</b>	P.T. in Cardiopulmonary & Integumentary conditions	80	20	100	80	20	100
<b>4</b>	P.T. in Comm. Health	80	20	100	80	20	100
<b>*5</b>	Principles in Bio-Engineering	# G R A D E					
<b>*6</b>	Professional Issues / Administration / Management & Marketing	# G R A D E					

**\*-COLLEGE EXAMINATION** passing in Each college examination is mandatory to appear for university examination The marks obtained in the respective college examination shall be converted in to GRADES

#GRADE - A+:75 % & above, A: 66 to < 75%, B+: 55 to <66%, B: 50 to <55%, C: <50% [FFF]

