

**SECOND BACHELOR IN PHYSIOTHERAPY**  
(1-YEAR DURATION)

**(I) PATHOLOGY, MICRO BIOLOGY**

1. Aims and objectives of study of Pathology.
2. Brief outline of cell injury, degeneration, necrosis and gangrene.
3. Inflammation: Definition, vascular and cellular phenomenon difference between Transudate and exudates. Granuloma.
- ④ 4. Circulatory disturbances: Hemorrhage, Embolism Thrombosis Infarction, shock, Volkmann's ischemic contracture.
5. Blood disorder: Anemia, Bleeding disorder.
6. CVS: Heart and Blood vessels, Coronary heart disease
7. Respiratory System: Ch. Bronchitis, Asthma Bronchiectasis, Emphysema, COPD etc.
- ⑧ 8. Bones and Joint: Arthritis & Spondyloarthropathy
9. PNS and Muscles: Neuropathies, Poliomyelitis & Mypathies etc.
10. CNS: Infection, Demyelinating disease, Degenerative disease etc.
- ⑪ 11. Neoplasia
- ⑫ 12. Growth and its disorders like hypertrophy hyperplasia & atrophy.
13. Autoimmune diseases.
14. Healing and repair.
15. Diabetes mellitus and gout.

Microbiology

1. Introduction and History of Microbiology ✓
2. general lectures on Microorganisms (brief) ✓
3. Sterilization and asepsis.
4. Infection- Source of infection and Entry and its Spread-
5. Immunity- Natural and Acquired
6. Allergy and hypersensitivity.
7. Outline of common pathogenic bacteria and diseases produced by them.
  1. Respiratory tract infections. ✓
  - ✓ 2. Meningitis.
  3. Enteric infections.
  4. Anaerobic infections.
  - ⑤ 5. Urinary tract infections. ✓
  - ✓ 6. Leprosy, tuberculosis and miscellaneous infections.
  - ⑦ 7. Wound infections.
  - ⑧ 8. Sexually transmitted diseases.
  - ✓ 9. Hospital acquired infections.
8. Virology – virus infections, with special mention of Hepatitis.
9. Poliomyelitis & rabies.

## (2) PHARMACOLOGY

1. **General Pharmacology:** - Introduction and definitions, Nature and sources of drugs; Dosage forms of drugs' Routes of drug administration, Pharmacokinetics (Absorption, Bioavailability, Distribution, Metabolism Excretion, First order Zero order Kinetics); Pharmacodynamics (sites and mechanisms of drug action in brief, Adverse drug reactions, Margin of safety of drugs and factors influencing dosage and drug response)
2. **Drugs Affecting ANS:-** General Introduction, Drug affecting parasympathetic nervous system, Drugs affecting sympathetic nervous systems,
3. **Drugs Affecting Peripheral (Somatic) nervous System:-** Skeletal Muscle Relaxants; Local Anesthetics.
4. **Renal and CVS :** Diuretics; Renin-angiotension system and its inhibitors , Drug treatment of Hypertension, Angina pectoris, Myocardial infarction Heart failure, and hypercholesterolemia.
5. **Anti-inflammatory drugs and related autacoids:** Histamine, Bradykinin , 5-HT and their antagonists; Prostaglandin's and leu kotrienes; Nonsteroidal-Anti-inflammatory drug, Antirheumatic drugs and drugs used in gout.
6. **Drugs Affecting CNS:** General anesthetics, Anxiolytics and hypnotics; Alcohol, Opioid analgesis Drug dependence and abuse Antiepileptic drugs, Drug therapy for Neurodegenerative disorders.
7. **Endocrines:** Parathyroid hormone, Vitamin D, calcitriol and drugs affecting Calcium balance, Thyroid and antithyroid drugs; Adrenocortical and anabolic steroids, Insulins and Oral Hypoglycaemic agents.
8. **Drugs Affecting Respiratory System:** (Drug therapy of bronchial asthma and chronic obstructive pulmonary disease.)
9. **Chemotherapy:** Introduction; sulfonamides, Fluoroquinolones, Penicillins, Cephalosporins, newer B-lactam antibiotic, aminoglycosides Macrolides and Newer antibiotics, Tetracyclines Chloramphenicol, Chemotherapy of Tuberculosis and leprosy, antiseptics-disinfectants.
10. **Miscellaneous Topics:** Management of stroke, Toxicology and heavy metal poisoning, special aspects of paediatric and geriatric pharmacology; Drug interactions with drugs commonly used by physiotherapists; Hematinics, vitamins and antioxidants.

### (3) EXERCISE THERAPY- II

1. P.N.F: Detail theory of proprioceptive-neuro muscular facilitation techniques—  
Functional re-education and demonstration.

2. Co ordination Exercises: Definition of coordinated movements, incoordinated movements, Factors for coordinated movements technique of coordination excercises.

3. Gait: Analysis of normal gait with muscle work, various pathological gaits. → Nilam

4. 2 point, 3 point & 4 point gait: Introduction, crutch measurement, crutch balance, various types of crutch gait in details. → Nilam

5. Individual, group and mass exercises, maintenance exercises, plan of exercise-therapy tables and schemes. → Nilam

6. Therapeutic exercises – impact on physical function → Tabish sir

7. Strategies for effective exercise instruction → Tabish sir

8. Independent learning activities → Mahendra sir

9. Range of motion & types of ROM exercises → Nilam

10. Resistance exercises and adaptation of skeletal muscles → Nilam

11. Principles of aerobic exercises & its physiological response → Mahendra sir

12. Determinants of exercise program → Nilam

13. Testing as basis of aerobic program → Mahendra sir

14. Stretching & its determinants → Tabish sir

15. Manual stretching techniques → Tabish sir

16. Peripheral joint mobilization techniques → Tabish sir

17. Aquatic exercises → Tabish sir

18. Application of therapeutic exercises to different regions of body → Nilam

19. Pulmonary exercises & postural drainage → Mahendra sir

20. Yoga- Definition-History-Principles-Concepts, General effects of yogic posture on the body. → Mahendra sir

#### PRACTICAL

1. Gait and crutch walking. → Nilam

2. Resistive Exercise.

3. Range of motion exercise. → Tabish sir

4. Stretching.

5. Mobilization techniques.

6. Breathing exercise and postural drainage → Mahendra sir

7. Practical record.

(4) Electrotherapy - II

- ① Electrophysiology & thermal principles ✓
- ✓ 2. Electrical properties of cell & tissue
- ✓ 3. Tissue repair *d*
4. Sensory & motor nerve activation
- ✓ 5. Pain & role of physical modalities *d*
6. Thermal effect
7. Low energy treatment *long*
8. Stimulative effect
9. Conduction agents of heat & cold
10. Electromagnetic agents : IRR, Diathermy, Low intensity laser, UV therapy
11. Ultrasound *d*
12. Low frequency current: IFT, TENS
13. Diagnosis & assessment applications: Electrophysiology testing
- ✓ 14. Wound repair *R. d*

PRACTICALS:

1. Practical applications of the above.
2. Practical record.

(5)

## PSYCHOLOGY

### I. General Psychology –

1. Definition of Psychology
  - i. Science of mind, consciousness and behavior
  - ii. Scope and branches of Psychology
2. Methods of Introspection, observation and experimentation
3. Hereditary and Environment
  - i. Relative importance of heredity and environment
  - ii. Physical characteristics intelligence and personality.
  - iii. Nature vs. nurture controversy
4. Learning
  - Types of Learning
    - i. Trial and error
    - ii. Classical Learning
    - iii. Instrumental learning
    - iv. Insight for Learning
5. Memory
  - i. Steps of memory
  - ii. Measurement of memory
  - iii. Causes of forgetting
  - iv. Concept of STM and LTM
6. Perceptual Process
  - i. Nature of perceptual process
  - ii. Structural and functional factors in perception
  - iii. Illusion and Hallucination
7. Emotion
  - i. Emotion and feeling
  - ii. Physiological changes
  - iii. Theories of emotion (James-Lange and Eonnon-Bird)
8. Motivation
  - i. Motive; need and Drive
  - ii. Types of motive: Physiological, Psychological and Social
9. Intelligence  
Definitions: theory and assessment
10. Personality: Definition; Types and measurements

## 11 Child Psychology

### 1. Concept of child Psychology

- a) Meaning; nature, and subject matter of child Psychology
- b) Practical importance of studying child Psychology for rehabilitation professionals

### 2. Methods of studying child development

- a) Baby Biography
- b) Case History
- c) Behavior rating

## II. Applied Psychology

### Section - A Industrial Psychology

1. Human Engineering  
Importance of human engineering  
Development of human engineering  
Problems in human engineering
2. Decision Making  
Process and steps indecision making  
Individual decision-making  
Decision making in organization
3. Stress and mental health  
Causes and reaction to stress  
Stress management
4. Work Culture, moral and rewards of work discipline
5. Guidance and counseling  
Meaning, types and objectives of counselor

Section - B Rehabilitation Psychology: Interpersonal Relationships, Familial & Social relationships, acceptance about the disability - its outcome in relation to different diagnostic categories psychological aspects of multiple handicapped, contribution of psychology in Total Rehab.

### PSYCHIATRY

1. Definition/criteria of Normality and Abnormality and factor contributing to normal mental health.
2. Neurotic Disorders.
3. Psychotic Disorders.
4. Psychosomatic Disorders.
5. Organic mental disorders.
6. Substances abuse disorders.
7. Problems in adjustment in old age.
8. Psychotherapy.
9. Child Psychiatry.

## (6) COMMUNITY MEDICINE:

1. General concepts of health diseases, with reference to natural history of disease with propathogenic and pathogenic phases. The role of socio-economic and cultural environment in health and disease. Epidemiology, definition and scope.
2. Public health administration an overview of the health administration set up at Central and state levels.
3. The national health programme-highlighting the role of social, economic and cultural factors in the implementation of the national programme.
4. Health problems of vulnerable groups-pregnant and lactating women, infants and pre-school children, occupational groups.
5. Occupational Health-definition, scope occupational disease prevention of occupational diseases and hazards.
6. Social security and other measurement for the protection from occupational hazard accident and diseases. Details of compensation acts.
7. Family planning – objectives of national family planning programmes and family methods. A general idea of advantage and disadvantages of the methods.
8. Mental health emphasis on community aspects of mental, role of Physiotherapy in mental health problems such as mental retardation etc.
9. Communicable disease- an overall view of communicable disease classified according to principle mode of transmission role of insect and other factors.
10. International health agencies.
11. Community medicine and rehabilitation epidemiology, habitat, nutrition, environment anthropology.
  - a. The philosophy and need of rehabilitation
  - b. Principles of physical medicine
  - c. Basic principles of administration or organization.
12. Introduction to community health.
13. CBR and Institutional based rehabilitation and strategies to intervene in rural health system.
14. CBR in relation to different medical & surgical conditions.

# (7) BIOMECHANICS & KINESIOLOGY

## I) ESSENTIAL CONCEPTS

- a) Motion and forces, Axis and planes, Mechanical lever, Lever in Human body.
- b) Force distribution-linear force, resultant force & equilibrium, parallel forces in one plan concurrent force.
- c) Newton's laws- Gravity and its effects on human body
- d) Moments
- e) Forces and moments in action
- f) Concepts of static equilibrium and dynamic equilibrium
- g) Composition and resolution of forces
- h) Friction

## II) KINEMATICAL CONCEPTS

## III) KINETIC ASPECTS OF LIMB MOVEMENT:

Biomechanics of Upper Extremity

Scapulo-shoulder Joint

Elbow Joint

Wrist Joint & Hand

Motion of hip & pelvis ✓

Forces of hip & pelvis

Motion of knee joint

Forces of knee joint

Patello femoral joint

Ankle and foot Kinematics

Motion of ankle

Forces of ankle joint

Stability of ankle joint

Temporomandibular joint

## IV) BIOMECHANICS OF GAIT:

Gait cycle

Parameters of gait

Myokinetics of human gait

Gait deviations

Crutch and cane exercises

## V) POSTURE:

Anatomical aspects of posture

Factors affecting posture

Assessment of Posture

Types of Posture

Postural deviation