

First B.O.Th. Year
102.HUMAN PHYSIOLOGY

[235 HRS]

Theory — 155 Hrs, Practical / Laboratory —80 Hrs

Course 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 Musculo-skeletal, Neuro-motor, Cardio-respiratory, Female uro-genital function, & alterations in function with aging
- 3) Analyze physiological response & 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.

Course contents:

- 1) **GENERAL** Physiology Structure of cell membrane. Transport across cell membrane and Homeostasis ---- (only short notes)(4hrs)
- 2) **BLOOD-** Rh- A B O system & mismatch-transfusion WBC plasma protein Erythrocytes, Hemoglobin. Normal values of Blood (Composition & function)..... (7hrs)
- 3) **NERVE** Neuron AHC(8hrs)
 - i)- Structure, classification & Properties; ii)- R.M.P. iii)- action potential;
 - ii)- Propagation of nerve impulse; v)- degeneration & regeneration
 - iii)- Reaction of degeneration (retrograde)
- 4) **MUSCLE**(9hrs)
 - i)- Structure- properties-classification-excitation/contraction coupling
 - ii)- Motor unit- E.M.G.- factors affecting muscle transmission
 - iii)-Neuro-muscular transmission
- 5) **C.N.S. (32hrs)**
 - i)- Receptor. physiology-classification & properties-;
 - ii)- Synapse-structure, properties, & transmission;
 - iii)- Reflexes-classification & properties;
 - iv)- Sensory & Motor Tracts-effect of transaction (complete & incomplete) at various levels
 - v)- Physiology of Touch, Pain, Temperature & Proprioception:
 - vi)- Physiology of Muscle Tone (muscle spindle); Stretch
 - vii)- Vestibular Appralus mainly otolith organ Anatomy
 - viii)-Connections Function of Basal Ganglia, Thalamus, Hypo Thalamus, Prefrontal lobe, P.A.S. and cerebellum
 - ix)- Sensory / motor cortex;
 - x)- Limbic system;

- xi)- Learning, memory & condition reflex,
- xii)- Physiology of Voluntary movement
- 6) EXCRETARY system..... (10hrs)**
 - i)- Kidneys- structure & function;
 - ii)- urine formation;
 - iii)- Micturition- neural control — neurogenic bladder
- 7) TEMPERATURE REGULATION (05 hrs)**
 - i)- circulation of the skin- body fluid- electrolyte balance
- 8) ENDOCRINE..... (10 hrs)**
 - i)- secretion- regulation & function of Pituitary-thyroid-adrenal parathyroid pancreas
- 9) REPRODUCTIVE system.....(05 hrs)**
 - i)- Functions of Estrogen, Progesterone & Testosterone
 - ii)- Puberty & Menopause
- 10) SPECIAL senses**
 - i) Eye-Errors of refraction-accommodation-reflexes-dark & light adaptation-photosensitivity.....(05 hrs)
 - GIT system (05 hrs)
- 11) RESPIRATORY system..... (20 hrs)**
 - i)- Introduction, general organization;
 - ii)- Mechanics of respiration;
 - iii)- Pulmonary Volumes & capacities;
 - iv)- Anatomical & Physiological Dead space-ventilation/perfusion ratio, alveolar ventilation
 - v)- Transport of respiratory gases
 - vi)- Nervous & Chemical control of respiration
 - vii)- Pulmonary function tests-Direct & indirect method of measurement;
 - viii)- Physiological changes with altitude & acclimatization
- 12) CARDIO — VASCULAR(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 & function affecting;
 - vi)- Peripheral resistance, venous return
 - vii)- Regional circulation-coronary-muscular, cerebral
 - viii) normal ECG.
- 13) EXERCISE physiology -.....(10 hrs)**
 - i) Effects of acute & chronic exercises;
 - ii) oxygen / CO₂ transport-O₂ debt
 - iii) effects of exercise on muscle strength, power, endurance, B.M.R.,R.Q.-hormonal & metabolic effects-respiratory & cardiac conditioning
 - iv) AGING

- v) Training-fatigue- & recovery;
- vi) Fitness-related to age, gender, & body type

14) A.N.S (05hrs)

Sympathetic / parasympathetic system-adrenal medulla-functions-Neuro
Transmitters-role in the function of pelvic floor-(micturation, defecation labour)

TEXTBOOKS

- 1) Course in Medical Physiology — Vol- I & II- by Dr. Chaudhari
- 2) Medical Physiology - by Dr. Bijlani
- 3) Text book on Medical Physiology — by Gyton
- 4) Text book of Physiology — AK. Jam

REFERENCE BOOKS

- 1)- Review of medical physiology — Guyton
- 2)- Samson & wrights applied physiology
- 3) Human Physiology — Chaudhary & Bijiani
- 4). Essentials of Medica' physiology K Semubulingam