

PHYSIOLOGY-II (THEORY)

Blood fluids and Kidneys

Compartments of body fluids and measurement

Renal function test

Tissue and lymph fluids

Fluid Excess/depletion

Structure of kidney/Nephron

General functions of kidney

GFR factors regulating

Formation of urine filtration, reabsorption, secretion, Plasma

Clearance

Concentration and dilution of urine

Renal failure/uremia

Electrolyte balance

Water balance

Regulation of blood pressure by kidneys

Nephrotic syndrome

Hormones of kidney

Acidification of urine

Artificial kidney/Hemodialysis

Acid base balance

Metabolic acidosis/Alkalosis

Micturition

Abnormalities of micturition including incontinence

Nervous System

Organization of CNS

Significance of Dermatomes

Classification of nerve fibers

Properties of Synaptic transmission

Neurotransmitters and neuropeptides

Types and functions of Sensory receptors

Receptors and Neurotransmitters (applied aspect)

Functions of spinal cord ascending tracts

Reflex action/Reflexes

Interpretations of reflexes

Muscle spindles/muscle tone

UMN/LMN lesion features and localisation

Tactile, temperature and pain sensations

Injuries and diseases of spinal cord

Structure of cerebral cortex

Analgesia system

Sensory cortex

Disorders of cranial nerves

Motor cortex	
Motor pathways, Pyramidal and Extrapyramidal	Hemiplegia/Paraplegia
Basal ganglia, connections and functions	Parkinsonism and other lesions of basal ganglia
Cerebellum, connections and functions	Cerebellar Disorders
Vestibular Apparatus/Regulation of Posture and equilibrium	Sleep Disorders
Reticular formation	
Physiology of sleep EEG	
Physiology of memory	Higher mental function assessment
Physiology of speech	Abnormalities of speech
Thalamus-nuclei and functions	Thalamic syndrome
Hypothalamus limbic system	Lesion of Hypothalamus
Cerebrospinal fluid	
Regulation of body temperature	
Functions of skin	Hydrocephalus
Autonomic nervous system	
Physiology of aging	
Special Sences	
Structure and function of eye-ball	Intraocular pressure and Glaucoma
Optical principles	
Accommodation of eye	
Errors of refraction	Visual acuity
Photochemistry of vision	
Color vision/night blindness	Color blindness fundoscopy
Dark and light adaptation	
Neural function of Retina	
Visual pathway light reflex and pathway	Field of vision and lesions of visual pathway
Visual cortex	
Intra ocular fluids	Visual evoked potentials and electroretinogram
Eye movements and control	
Physiological anatomy of chochlea	
Functions of external and middle Ear	
Functions of inner Ear-Organ of Corti	Hearing test audiometry
Auditory pathway	Types of deafness, Auditory

Physiology of smell-receptors and pathway	evoked potentials
Physiology of taste	Olfaction/Taste abnormalities
Endocrinology	
General principles (classification, mechanism of action feed back control)	Acromegaly, Giantism
Biosynthesis, transport, metabolism, actions and control of secretion of hormones	Hormonal assay
Hypothalamus	Dwarfism
Anterior pituitary	Panhypopituitarism, Sheehan's syndrome
Posterior pituitary	Diabetes inspidus
Thyroid gland, Parathyroid, calcitonin	Myxoedema, Cretinism, thyrotoxicosis, Pheochromocytoma
Adrenal medulla, Adrenal cortex	Syndrome of inappropriate ADH secretion, Cushin's syndrome, Conn's syndrome, Addison's disease
Pancrease	Diabetes Mellitus and Hypoglycemia
GIT	
Pineal gland	
Thymus	
Kidney	Adrenogenital syndrome
Physiology of growth	Zollinger Ellison's syndrome
Reproduction	
Functional anatomy of Male reproductive system	Chromosomal abnormalities
Spermatogenesis	
Semen analysis	Male infertility
Erection and ejaculation	
Testosterone	
Male puberty	
Oogenesis and functional anatomy of female gonads	
Oestrogen and progesterone	Female infertility
Menstrual cycle	Contraception
Puberty and menopause	

Pregnancy — Physiological changes in mother during pregnancy Pregnancy Tests
Placenta
Parturition
Lactation
Neonatal Physiology

PHYSIOLOGY-II (PRACTICAL)

1. **Nervous System:** Examination of superficial reflexes, Examination of deep reflexes, Examination of sensory, motor system, Clinical examination of cranial nerve.
2. **Cardiovascular System:** Frog's heart, Recording of normal cardiogram and effect of temperature, Effect of drug on cardiac contractility, Effect of ions on cardiac contractility, Properties of cardiac muscles in frog heart (Demonstration), Study of sheep's heart, Cardiopulmonary resuscitation, Cold pressor test, Triple response, Examination of arterial pulse, ECG recording/interpretation, Measurement of arterial blood pressure, Effect of exercise and posture on BP, Examination of Apex Beat, Heart Sounds- auscultation of normal sounds/murmurs.
3. **Special Senses:** Field of vision by confrontation method, Field of vision by Perimetry, Light reflex, Ophthalmoscopy, Visual acuity, Color vision, Hearing tests, Audiometry, Taste Sensation, Olfaction sensation.
4. **Frog's Nerve and Muscle:** Simple muscle twitch (SMT) in frog and effect of temperature, Effect of fatigue on muscle contraction, Tetanization in frog's muscle (Demonstration), Effect of two successive stimuli on SMT, Effect of preload and after load on SMT, Determination of velocity of conduction in sciatic nerve, Use of physiograph (polygraph), Elicit fatigue in human index finger.
5. **Miscellaneous:** Recording of body temperature, Pregnancy tests, Introduction to biostatistics e.g. data collection and analysis.

RECOMMENDED BOOKS

1. Arthur C Guyton, M D, **Text Books of Medical Physiology**, W B Saunders Company, Ninth edition, (1996).
2. William F Ganong, **Review of Medical Physiology**, Prentice Hall International Inc., seventeenth edition, (1995).
3. Chandi Charan Chatterjee, **Human Physiology**, Medical allied agency, (1994).
4. Hakim Mohammad Said and Hakim Naeemuddin Zubairi, **Kitab-al-Abdan**, volume I and II Hamdard Press, (1987).