

M. PHIL PHYSIOLOGY (MAJOR)

PHYSIOLOGY (MCQS & SEQs) Table of Specifications (TOS)

Topic / Chapter Wise Distribution of MCQs and SEQs

Topic / Chapter	No. of MCQs	No. of SEQs
Basic and Cell Physiology	10	01
Blood	13	01
Nerve and Muscle	12	02
Gastro Intestinal Tract	08	01
Cardiovascular System	20	02
Respiratory System	12	01
Kidney and Body Fluids	15	01
Nervous System	22	02
Special Senses	12	01
Endocrines	15	02
Reproduction	11	01
Total	150	15

MCQs

Chapter / Topic **No. of MCQs**

Basic and Cell Physiology

- | | |
|---|----|
| 1. Functional organization of human body, homeostasis. | 01 |
| 2. Cell membrane, transport through cell membrane, intercellular connections. | 02 |
| 3. The cytoskeletons and cell motility. | 01 |
| 4. Endoplasmic reticulum, Golgi complex and cell secretion. | 01 |
| 5. Lysosomes, Endocytosis, peroxisomes. | 01 |
| 6. Mitochondria and oxidative phosphorylation. | 01 |
| 7. Ribosomes, nucleolus, protein synthesis. | 01 |
| 8. The nucleus; chromatin, chromosomes, DNA replication, gene expression. | 01 |
| 9. The cell cycle, mitosis, meiosis, programmed cell death. | 01 |

Blood

- | | |
|---|----|
| 1. Composition and general functions of blood, plasma proteins. | 01 |
| 2. Red blood cell functions, erythropoiesis. | 02 |
| 3. Haemoglobin, structure, functions, synthesis, types. | 01 |
| 4. Fate of red blood cells, jaundice, red cell indices, iron absorption, storage and metabolism, anemias. | 02 |
| 5. White blood cells, types, production and functions, immunity. | 03 |
| 6. Platelets, blood clotting, bleeding disorders, anticoagulants. | 02 |
| 7. Blood groups, blood transfusion and its complications, reticulo-endothelial system. | 01 |

Nerve and Muscle

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|---|----|
| 1. Structure and functions of a neuron, properties of nerve fibers, resting membrane potential | 02 |
| 2. Action potential and its conduction, compound action potential, nerve degeneration & regeneration. | 02 |
| 3. Skeletal muscle - structure. | 01 |
| 4. Mechanism of contraction. | 02 |
| 5. Differences between skeletal, cardiac and smooth muscles. | 01 |
| 6. Neuromuscular transmission, myasthenia gravis. | 02 |
| 7. Motor unit, types of muscle contractions, rigor mortis, tetanus, treppe phenomenon. | 02 |

Gastrointestinal Tract

1. Functions, motility and secretions of the stomach, small intestine and large intestine, enteric nervous system. 02
2. Hormones of GIT. 01
3. Mastication, swallowing, vomiting, defecation and their control pathways, dysphagia. 02
4. Liver and gall bladder functions. 01
5. Obesity, starvation. 01
6. Nutrients digestion and absorption. 01

Cardiovascular System

1. Cardiac muscle – properties, contraction mechanism, metabolism. 01
2. Cardiac cycle – pressure & volume changes 02
3. Pace maker potential and spread of cardiac impulse, nervous control of the heart. 02
4. Heart sounds, murmurs 01
5. ECG - Normal 01
6. Vector analysis (Normal and Abnormal) 01
7. Arrhythmias. 01
8. Cardiac output & its regulation 01
9. Functional types of blood vessels, hemodynamics, local control of blood flow, peripheral resistance & its regulation. 01
10. Blood pressure and its regulation. 02
11. Arterial pulse, venous return, types of flow meters. 02
12. Cerebral, coronary, pulmonary & splanchnic circulations, cutaneous circulation triple response. 02
13. Fetal circulation and cardiovascular changes at birth, shock and its types, cardiovascular changes during exercise. 03

Respiratory System

1. Mechanics of breathing, respiratory & non – respiratory functions of the lungs. 01
2. Surfactant, compliance, dead space. 01
3. Lung volumes & capacities. 02
4. Diffusion of gases across the respiratory membrane, ventilation perfusion ratio, protective reflexes. 01
5. Transport of oxygen, transport of carbon dioxide, respiratory exchange ratio. 02
6. Nervous and chemical regulation of respiration, abnormal types of breathing. 02
7. Hypoxia and its types, cyanosis. 01
8. High altitude physiology, deep sea diving, respiratory changes during exercise. 02

Kidney and Body Fluids

1. Fluid compartments, Interstitial fluid and lymph. 01
2. GFR and its regulation. 02
3. Tubular reabsorption, secretion. 02
4. Plasma clearance, mechanism of concentration and dilution of urine, Hormonal functions of the kidney. 03
5. Water and electrolyte balance, dehydration, acidification of urine. 02
6. Acid base balance-normal. 02
7. Abnormalities of the acid-base balance. 02
8. Micturition and its control. 01

Nervous System

1. Classification of nerve fibers, synaptic transmission and its properties, neurotransmitters, neuropeptides. 02
2. Classification and properties of sensory receptors, Reflex action, types of reflexes. 02
3. Muscle spindle and its functions, muscle tone. 01
4. Ascending tracts, touch, temperature and pain sensations. 02
5. Cerebral cortex, motor and sensory areas. 02
6. Pyramidal and extra-pyramidal tracts. 02
7. Basal ganglia-functions and lesions. 01
8. Cerebellum- functions and lesions. 01
9. Vestibular apparatus- functions, control of posture and equilibrium. 01
10. Speech, mechanism, memory, CSF. 02
11. Thalamus, hypothalamus, limbic system. 01
12. Temperature regulation. 01
13. Sleep mechanism, disorders, EEG. 02
14. Autonomic nervous system. 02

Special Senses

1. Optics of the eye, mechanism of accommodation, errors of refraction. 02
2. Visual acuity, depth perception, aqueous humor, Neural function of the retina. 02
3. Photochemistry of vision, color vision, Visual cortex, visual pathway. 02
4. Functions of the middle ear, organ of Corti-structure and function. 02
5. Determination of the sound frequency, loudness, direction of sound, auditory cortex, types of deafness. 02
6. Taste and smell. 02

Endocrines

1. Types of hormones, hormone receptors, mechanism of action of hormones, feed back control. 02
2. Anterior pituitary hormones and abnormalities. 02
3. Posterior pituitary hormones. 01
4. Thyroid hormones and abnormalities. 02
5. Hormones involved in blood calcium regulation (parathyroid). 02
6. Hormones of adrenal cortex. 02
7. Abnormalities of hormones of adrenal cortex. Hormones of adrenal medulla, thymus, pineal body. 02
8. Hormones of pancreas. Control of blood glucose. 02

Reproduction

1. Spermatogenesis, male puberty, functions of testosterone. 02
2. Erection, ejaculation, semen, male infertility. 02
3. Menstrual cycle, puberty, menopause. Estrogens and progesterone. 02
4. Physiological changes during pregnancy, parturition, functions of placenta. 02
5. Lactation, neonatal physiology, female infertility. 01