

Contents

Preface vii

THEORY

1. General Physiology	3-3
1. Homeostasis	3
2. Cellular Physiology	4-12
1. Cell Membrane (Plasma Membrane)	4
2. Endoplasmic Reticulum	5
3. Golgi Apparatus	5
4. Lysosomes	6
5. Peroxisomes (Microbodies)	6
6. Mitochondria	6
7. Nucleus	6
8. Marker Enzymes	6
9. Cytoskeletal Filaments	7
10. Cell Junctions	8
11. Cellular Receptors	9
12. Membrane Transport	9
13. Membrane Potentials	11
14. Cellular Fluids	12
3. Nerve Muscle Physiology	13-20
1. Structure of a Neuron	13
2. Parts of a Neuron along with their Characteristics	13
3. Classification of Neurons along with their Characteristics	13
4. Myelin	13
5. Nerve Action Potential	14
6. Classification of Nerve Fibers	14
7. Nerve Injury	15
8. Skeletal Muscle	16
9. Neuromuscular Transmission and Excitation Contraction Coupling	16
10. Neuromuscular Blocking Agents and their Mechanisms of Action	17
11. Neuromuscular Junction and Diseases	17
12. Muscle Contraction: Sliding Filament Theory	17
13. Length-Tension Relationship: Skeletal Muscle	18

14. Skeletal Muscle Fiber Types	18
15. Cardiac Muscle	19
16. Smooth Muscle	19
17. Synaptic Potentials	19
18. Inhibition and Facilitation at Synapses	19
19. Neurotransmitters	20
4. Neurophysiology	21-33
1. Sensory Physiology	21
2. Touch Receptors	21
3. Pain Receptors	21
4. Somatosensory Pathways	22
5. Special Senses	22
6. Laws and Principles in Sensory Physiology	26
7. Motor Physiology	26
8. Reflex	27
9. Cerebellum	27
10. Basal Ganglia	28
11. Thalamus	30
12. Hypothalamus	30
13. Learning and Memory	30
14. Language and Speech	31
15. Cerebral Blood Flow	31
16. Cerebrospinal Fluid	32
17. Electroencephalography Waves	32
18. Sleep	32
5. Respiratory Physiology	34-45
1. Lung Airway Generations—Weibel's Model of Airways	34
2. Pulmonary Surfactant	35
3. Mechanics of Breathing	35
4. Muscles of Inspiration and Expiration	36
5. Pressure Volume Relationship in Lung—The Concept of “Compliance”	36
6. Pressure Volume Curves of Lung (P_L), Chest Wall (P_W), Lung and Chest Wall Combined (P_{TR})	36
7. Lung Volumes and Capacities	37
8. Ventilation and Perfusion	38
9. Diffusion of Gases	40
10. Transport of Gases	40
11. Oxygen Transport	40
12. Transport of Carbon Dioxide	42
13. Regulation of Respiration	42

14. Hypoxia and its Types	44
15. Environmental Physiology	44
6. Cardiovascular Physiology	46–58
1. Cardiac Potentials	46
2. Conduction System of Heart	47
3. Electrocardiogram (ECG)	47
4. Cardiac Cycle	48
5. Cardiac Output	50
6. Coronary Circulation	51
7. Vascular Physiology	51
8. Blood Groups and their Characteristics	53
9. Characteristics of Blood Vessels	53
10. Hemodynamics	54
11. Blood Coagulation	55
12. Blood Pressure	56
7. Endocrine Physiology	59–75
1. Endocrine System	59
2. Classification of Hormones	59
3. Role of Hypothalamus	59
4. Pituitary Gland	59
5. Prolactin	60
6. Thyroid Gland	61
7. Endocrine Pancreas	63
8. Adrenal Gland	65
9. Aldosterone	65
10. Glucocorticoids—“Cortisol”	66
11. Adrenal Sex Steroids	67
12. Calcium Homeostasis	67
13. Parathormone	67
14. Vitamin D	68
15. Calcitonin	68
16. Reproductive Physiology	69
17. Placental Protein Hormone: Human Chorionic Gonadotropin (HCG)	75
18. Lactation	75
8. Renal Physiology	76–83
1. Structure of Kidney and its Functions	76
2. Glomerular Filtration Rate	76
3. Parts of Nephron	77
4. Free Water Clearance (CH_2O)	80
5. Natriuretic Peptides	81
6. Micturition	81
7. Acid-Base Balance	82

9. Gastrointestinal Physiology	84-90
1. Functions and Structural Characteristics of Gastrointestinal Tract	84
2. Gastrointestinal Secretions	84
3. Gastrointestinal Hormones	86
4. Regulation of Food Intake	87
5. Digestion and Absorption	87
6. Absorption of Iron	88
7. Gastrointestinal Motility	89
8. Colonic Flora	90
9. Dietary Fibers	90
10. Exercise Physiology	91-92
1. Types of Exercises and Sources of Energy for Muscles	91
2. Cardiovascular Responses to Exercise	91
3. Respiratory Responses to Exercise	91
4. Regulation of Body Temperature	91

LATEST QUESTION PAPERS

NEET PG 2023	95
NEET PG 2022	96
NEET PG 2021	97
INI-CET November 2023	97
INI-CET May 2023	98
INI-CET November 2022	99
INI-CET May 2022	100
INI-CET November 2021	101
INI-CET July 2021	102
FMGE January 2024	103
FMGE January 2023	103
FMGE July 2023	104
FMGE June 2022	105
FMGE December 2021	106
FMGE June 2021	106