

# PHYSIOLOGY

## Paper - I

General Physiology ✓

Blood & Body fluids ✓ 19-20

Muscle & Nerve Physiology ✓ 12-14

Digestive System ✓ 15-16

Renal Physiology & Excretion ✓ 17-18

Endocrinology ✓ 17-18

Reproductive System ✓ 18

## Paper - II

CNS ✓

Respiratory System ✓

CNS

Special Senses



## Blood & Body Fluids

### ESSAY :-

- (i) Define Erythropoiesis. Describe its various stages and factors affecting it. Add a note on: Anaemia. \*\*\*  
OT  
Add a factor required for RBC formation
- (ii) Discuss the Intrinsic pathway of blood Coagulations. Add a note on functions of platelets. \*\*\*
- (iii) Define Hemostasis<sup>\*\*\*\*</sup>. Describe how clotting is brought about and the Cascade hypothesis. Add a note on heparin.  
QA  
Add a note on hemophilia \*\*
- (iv) Define Immunity. Discuss in detail about Cell-mediated immunity.
- (v) Explain the extrinsic mechanism of Coagulation. Add a note on Anticoagulants.



(vii)	Describe how clotting is brought about and the cascade hypothesis. Add a note on heparin	(xiv)	Rh System
		(xv)	Cellular immunity
		(xvi)	Rh incompatibility **
		(xvii)	Measurement of extracellular fluid
		(xviii)	Humoral immunity
(i)	Erythroblastosis foetalis ** **	(xix)	Fibrinolytic system
(ii)	Anticoagulant & their mechanism of action ***	(xx)	Intrinsic factor of cattle
(iii)	Intrinsic Coagulation	(xxi)	Hemolytic disease of newborn
(iv)	Blood transfusion reactions ** **		
(v)	Plasma Proteins ** (functions) **		
(vi)	Immune globulins . . . .		
(vii)	Blood groups (or) ABO blood group system		
(viii)	B- Lymphocytes		
(ix)	Anaemia **		
(x)	Erythropoiesin		
(xi)	Cell mediated immunity ** **		
(xii)	Factors influencing erythropoiesis ** or stages		
(xiii)	Reticulo endothelial system		



# MUSCLE & NERVE PHYSIOLOGY

## SHORT NOTES

- (i) Neuromuscular Junction or Myoneural Junction ~~\*\*\*\*\*~~
- (ii) Isotonic & Isometric Contraction
- (iii) Excitation - Contraction Coupling \*\*\*\*
- (iv) Sarcomere \*\* (structure)
- (v) Myasthenia gravis \*\*
- (vi) Rigor Mortis \*\*
- (vii) Smooth Muscle
- (viii) Sarcotubular system
- ~~(ix) Sodium = 1~~
- (ix) Rheobase, utilization time and Chronaxie
- (x) Muscle tone

## ESSAY

- (i) Skeletal muscle Contraction, Add a note on myasthenia gravis



(i) Draw a diagram of NMJ and discuss neuromuscular transmission. Add a note on neuromuscular blockers.

## Digestive System

Essay :-

(i) Describe the composition, function and regulation of pancreatic secretion.

(ii) Explain about the secretion, composition and functions of gastric juice. Describe the different phases of gastric secretion. Add a note on gastric ulcers. \* \* \* \* \*  
Note on peptic ulcers  
Note on gastritis



SHORT NOTES

(i) Peristalsis **	
(ii) Deglutition (Second stage) ****	(xvii) Tissue Respiration
(iii) Functions of Saliva *** <i>Ascorbic acid</i>	(xviii) Metabolic Acidosis **
(iv) Function of bile salt **	
(v) Pancreatic Juice	
(vi) Small intestinal movement ****	
(vii) Functions of Liver	
(viii) Movement of stomach	
(ix) Digestion of fat ***	
(x) Defecation reflex **	
(xi) Phases of gastric secretion	
(xii) Gastric emptying	
(xiii) Functions of large intestine * *	
(xiv) Enterhepatic Circulation	
(xv) Function of gall bladder	
(xvi) Adipose tissue * *	



Renal Physiology & Excretion

Essays :-

- (i) Define micturition. Describe the mechanism of micturition in detail. Mention any three abnormal bladder.
- (ii) Define G.F.R. Give the normal value. Mention one method of measurement of G.F.R. Describe in detail the factors affecting G.F.R. \*\*\*
- (iii) What is Counter Current mechanism? Describe the mechanism involved in the concentration of urine. Add a note on Loop diuretics. \*\*
- (iv) Discuss in detail the mechanism of urine formation.

SHORT NOTES

- (i) Juxtaglomerular apparatus \*\*\* \*\*
- (ii) Glomerular Filtration rate \*\*\*
- (iii) Oligometrogram \*\*
- (iv) Micturition
- (v) Anti-diuretic hormone \* \*
- (vi) Innervation of urinary bladder \* \*
- (vii) Renal function tests \*\*\*
- (viii) Regulation of renal circulation.
- (ix) Non-excretory functions of kidney
- (x) Counter Current multiplier in kidney
- (xi) Role of kidney tubule in Counter Current mechanism
- (xii) Factors Affecting GFR. \* \*
- (xiii) Abnormal bladder
- (xiv) Functions of skin \* \* \* \*
- (xv) Metabolic Acidosis -
- (xvi) Mechanism of heat loss -  $R_1 - R_2$  Scales
- (xvii) Measurement of ECF.



## ENDOCRINOLOGY

### ESSAYS :-

- (i) What is the fasting blood glucose level? List the hormones regulating blood glucose level. Describe the role of insulin in regulating blood glucose.

~~Add a note on tetany.~~

- (ii) What is the normal blood Calcium level? Describe in detail the regulation of blood Calcium level. Add a note on tetany \*\*

- (iii) Describe synthesis, action and regulation of thyroid hormones. Add a note on clinical manifestations of hypo and hypersecretions of these hormones, \*\*\*\*



SHORT NOTES

(iv)	Describe the different functions of growth hormone. Add a note on acromegaly. Add a note on Dwarfism	(i)	Tetany ***
(v)	Mention the hormones secreted by pancreas. Discuss the various actions of insulin.	(ii)	Thyrogland Space
(vi)	Name the hormones secreted by adrenal glands. Discuss in detail the secretion, regulation and functions of glucocorticoids.	(iii)	Hypothyroidism * *
(vii)	Discuss in detail about calcium homeostasis. Add a note on hypocalcaemic tetany.	(iv)	functions of glucocorticoids.
		(v)	Acromegaly * * * *
		(vi)	Local hormones
		(vii)	Myxoedema * *
		(viii)	Posterior Pituitary hormones * *
		(ix)	Hypocalcaemic tetany
		(x)	Cushing disease
		(xi)	" Syndrome * *
		(xii)	Dwarfism
		(xiii)	Actions of insulin * * *
		(xiv)	Glucagon
		(xv)	Synthesis of thyroid hormones
		(xvi)	Functions of thyroid hormone



(xvii) Maintenance of Serum Calcium level

(xviii) Action of parathyroidism.

(xix) Gigantism

(xx) Naopressin

(xxi) ADH \*\*

(xxii) Cyclic AMP

(xxiii) Neuroendocrine reflex

(xxiv) Addison's disease

(xxv) Diabetes



REPRODUCTIVE SYSTEM

ESSAY

(i) Describe the ovarian, uterine and hormonal changes during the menstrual cycle. \* \* \*

OR  
Add a note on tests for ovulation pg 579

SHORT NOTES :

- (i) Contraceptives for women \* \* \* pg 606
- (ii) Sertoli cell \* \* \* pg
- (iii) Pregnancy tests \* \* \* \* \* pg 590
- (iv) Spermatogenesis \* \* \* \* \* pg 600
- (v) Feto-placental unit pg 588 ; Semblu - pg
- (vi) Ovarian cycle pg 576
- (vii) Ovulation \* \* \* pg 578

(viii) Functions of placenta \* \* \*

(ix) Oral contraceptive pill \* \* \* pg 602

(x) Safe period pg 606

(xi) Testosterone (OR) Action of testosterone pg

(xii) Milk ejection reflex \* \* \* pg 593

(xiii) Methods of contraception pg 606

(xiv) Tests of ovulation \* \* \* pg 579

(xv) Oxytocin pg

(xvi) Ovarian hormones and their functions pg 595

(xvii) Action of estrogen pg 595

(xviii) Inhibin pg 604

(xix) Fibrinolytic system \* \* \* pg



# GENERAL PHYSIOLOGY

## SHORT NOTES

- (i) Endoplasmic Reticulum
- (ii) Active transport
- (iii) Homeostasis
- (iv) Resting membrane potential
- (v) Secondary active transport
- (vi) facilitated diffusion
- (vii)  $\text{Na}^+$ - $\text{K}^+$  ATPase Pump
- (viii) Ionic basis for Action potential



# PAPER - II

## CARDIOVASCULAR SYSTEM

ESSAY :- Add a note on Ejection fraction  
Add a note on baroreceptors.

- (i) Define Cardiac output. What is cardiac index?  
List the methods of determining cardiac output.  
Explain the regulation of cardiac output.

- (ii) Define Cardiac cycle. What is the normal duration of cardiac cycle? Describe in detail the ventricular events. Add a note on I<sup>st</sup> and II<sup>nd</sup> heart sounds.

Describe the mechanical events in detail with suitable diagrams.

- (iii) Define blood pressure and give its normal range of values. What is pulse pressure and mean arterial pressure? Describe the role of kidney in regulating blood pressure.

(Baroreceptor reflex)



SHEET NOTES

(iv) Define Arterial blood pressure and mention the normal values. Describe in detail the regulation of blood pressure. (Short term regulation)

(i) P R Arterial

(ii) Short term regulation of blood pressure \*\*\*

(iii) Fetal Circulation \*\*\*

(iv) Labeled diagram of ECG showing upright and inverted waves of ECG \*\*\*

(v) Special features of pulmonary circulation.

(vi) End diastolic Volume

(vii) Features affecting Coronary Circulation \*\*\*

(viii) Hypovolemic shock \*\*\*

(ix) Heart Sounds \*\*\*

(x) Sino-Aortic Reflex

(xi) SA node

(xii) Conduction System of heart \*\*\*

(xiii) Sinoaortic baroreceptor reflex

(xiv) Jugular Venous pulse \*\*

(xv) Factors affecting cardiac output \*\*

(xvi) Pacemaker potential \*\*

(xvii) Baroreceptor



stroke  
CSF (CNS) local

(xviii) Cardiac Output \*\*

(xix) Extra Systole

(xx) Cardiac vascular changes during exercise \*\*

- (xxi) Triple response

(xxii) Name the methods to measure cardiac output - describe one in detail -

- (xxiii) Shock:

(xxiv) Special features of coronary circulation. \*\*

(xxv) Pressure changes in left ventricle during a cardiac cycle.

- (xxvi) Physiology of coronary circulation.



## RESPIRATORY SYSTEM

### Essay :-

- (i) Discuss how  $\text{CO}_2$  is transported in blood. Add a note on haldane effect. \*\*
- (ii) Describe in detail the transport of oxygen from the lungs to the tissues. Add a note on oxygen dissociation curve. Define hypoxia and hypercapnia. \*\*\*\*
- (iii) Describe the nervous regulation of respiration with suitable diagrams. \*\*\*\*  
Add a note on Hering Breuer reflex.
- (iv) Classify Hypoxia. What are causes for diff. types of hypoxia. Explain clinical features. Add a note on role of oxygen therapy.

(Hypercapnia)

- (v) Describe elaborately about lung volume and Capacity. Add a note on Spirometry.

### SHORT NOTES

Pulmonary surfactant

- (i) Surfactant \*\*\*\*
- (ii) Asphyxia
- (iii) Aphasia \*\*
- (iv) Anatomical [dead space] \*\*\*\*
- (v)  $\text{O}_2$  dissociation curve \*\*\*\* or (OOC)
- (vi) Periodic breathing
- (vii) Intrapleural pressure
- (viii) Dysbarism (Caisson's disease) \*\*\*\*
- (ix) Vital Capacity \*\*\*\*
- (x) Hypoxia \*\*\*\* (types)
- (xi) Hypoxic hypoxia
- (xii) Acclimatization to high altitudes \*\*



(xxiii)	Chloride Shift **
(xiv)	Artificial respiration ****
(xv)	Decompression Sickness ***
(xvi)	Lung Volume & Capacity
(xvii)	Chemical regulation of respiration
(xviii)	Spirograms
(xix)	Transport of $O_2$ in the blood **
(xx)	Compliance of lung
(xxi)	Transport of Carbon dioxide in the blood
(xxii)	Acute mountain Sickness
(xxiii)	Medullary respiratory centres -
(xxiv)	Ventilation perfusion ratio



## CENTRAL NERVOUS SYSTEM

### ESSAYS :-

- (i) List three descending tracts. Describe the origin, course and termination of corticospinal tract and the effects of lesion at various levels. \* \* \* \* \*
- <sup>10M</sup>  
Add a note on Brain Segment Syndrome \* \*
- (ii) Discuss in detail the pain pathway. Add a note on referred pain. \* \* \*
- (iii) Define synapse. Describe how an impulse transmitted across synapse. Explain the properties of synapse.
- (iv) Describe the production, circulation and functions of cerebrospinal fluid. Add a note on Lumbar Puncture.

(V) Name the descending tracts. Describe the corticospinal tract and mention the difference between UMN lesion and LMN lesion. \* \*

<sup>10M</sup>  
What is hemiplegia.

(vi) List the hypothalamic nuclei. Describe the connection, function and effects of lesion of hypothalamus. \* \*

(vii) Write in detail the components, afferents, efferents and functions of basal ganglia. \* \*

<sup>10M</sup>  
Note on Parkinson's disease

(viii) Describe the pathway of pyramidal tract with the help of diagram. Mention its functions. What are the differences b/w UML & LML.

<sup>8M</sup>  
Add a note on its lesion of internal (spinal level).



Name the functional divisions of cerebellum.  
Describe the functions and functions of cerebellum.

SHORT NOTES

- (i) Parkinsonism \* \* \* \* \*
- (ii) Saltatory conduction
- (iii) Functions of hypothalamus \* \* \* \*
- (iv) Cerebrospinal fluid \* \* \* \*
- (v) Functions of thalamus \* \* \* \*
- (vi) REM Sleep \* \* \* \*
- (vii) Referred Pain \* \* \* \*
- (viii) Knee Jerk \* \* \*
- (ix) Motor cortex
- (x) Thalamic Syndrome
- (xi) Functions of cerebellum \* \* \*
- (xii) EPSP
- (xiii) Weber's test
- (xiv) Properties of a reflex \* \* \*
- (xv) Conditioned reflex \* \*



- (xvi) Reflex Arc ★★ ★
- (xvii) functions of parietal lobe
- (xviii) Pply of Synapse. ★★ ★
- (xix) Parietal Cortex
- (xx) Broca's Aphasia Syndrome ★
- (xxi) Choroid plexus
- (xxii) Bell Meigs' Law
- (xxiii) Types of neuron
- (xxiv) Neuroglia
- (xxv) Somatosensory cortex
- (xxvi) Wallerian degeneration
- (xxvii) Cerebellar function tests
- (xxviii) Short term memory
- (xxix) Compare RGM & Non RGM Sleep
- (xxx) Pply of receptors
- (xxxi) Role of hypothalamus in temp. reg.
- (xxxii) Hemisection of Spinal Cord



## SPECIAL SENSES

### ESSAYS :-

- (i) Draw and Label the visual pathway. What are the effects of lesions at various levels in the pathway?
- (ii) Write an essay on mechanism of hearing. Add a note on deafness.

### SHORT NOTES

- (i) Functions of middle ear ★★☆☆★
- (ii) Accommodation reflex ★★
- (iii) Olfactory pathway ★☆☆★
- (iv) Endocochlear potential ★★
- (v) Colour vision. (Tests of colour vision) ★★



- (vi) Errors of refraction ★★★★★★
- (vii) Light reflex pathway
- (viii) Dark adaptation ★★★★★
- (ix) Touch <sup>or</sup> pathway ★★★★★★
- (x) Astigmatism
- (xi) Audiogram
- (xii) Draw and Label organ of Corti
- (xiii) Myopia ★★
- (xiv) Tests for hearing
- (xv) Accommodation to near vision
- (xvi) Taste buds ★★
- (xvii) Tympanic reflex
- (xviii) Tests for deafness
- (xix) Phototransduction
- (xx) Functions of vestibular apparatus
- (xxi) Touch pathway
- (xxii) Lesions of optic pathway at various levels