Physiology

PAPER 1

ENDOCRINE PHYSIOLOGY

ESSAY

1. Thyroid + Hypothyroidism
2. Insulin & Diabetes Mellitus
3. Hypothalamus + nuclei + hypothalamic obesity
4. Pituitary + growth hormone + acromegaly
5. ~~Cortisol~~
6. Adrenal Cortex + Glucocorticoids + Cushing's syndrome
7. Glucose homeostasis + ~~GTT~~
8. Serum Ca conc. + tetany
9. Hormones of Neurohypophysis + diabetes insipedus
10. ~~Adreno-medullary hormones~~
11. Aldosterone + Addison's
12. Thyroxine Synthesis+ hypo/hyper secretions
13. Anterior pituitary hormones

SHORT NOTES

1. Myxoedema
2. Conn's syndrome
3. Functions of glucocorticoids
4. Parathormone
5. –ve feedback mechanism in hormone control
6. Thyrotoxicosis
7. ~~Adrenogenital syndrome~~
8. Neuroendocrinal reflex
9. Tubular maximum for glucose
10. Acromegaly
11. ~~Adrenaline and Noradrenalin~~
12. Thyroid funct. Tests and importance
13. Pheochromocytoma
14. Dwarfism
15. ~~Glucagon~~
16. Calcitriol
17. Thyrotoxicosis

GIT

ESSAY

1. Gastric juice
2. Pancreatic juice
3. Phases of deglutition
4. Functions of liver + Jaundice
5. Salivary glands + secretions
6. Gastrointestinal hormones
7. HCl secretion – regulation and phases

SHORT NOTES

1. Bile
2. Gastric Emptying
3. Entero hepatic circulation of bile
4. Succus Entericus
5. Movts of small intestine
6. Fat absorption
7. Defecation reflex
8. Pancreas endocrine funct.
9. ~~Large intestine functions~~
10. Bile salts + enterohepatic circulation
11. Vomiting ~~– tests and disorders~~
12. Gastric movements + motility
13. Peristalsis
14. Myenteric reflex
15. Dietary fibre
16. Intestinal motility
17. Regulation by vagus, atropine, adrenaline etc on peristalsis
18. Intestinal villi + funct.
19. Digestive proteases
20. Deglutition reflex
21. Counter-current blood flow in villi
22. Pathophysiology of peptic ulcer

↳ Protective and Damaging factors for gastric mucosa.

REPRODUCTION

ESSAYS

1. Menstrual cycle + ovarian changes
2. Hormonal and endometrial changes during Menstrual cycle

SHORT NOTES

1. Semen composition and its application as diagnostic tool
2. ~~Formation~~ And functions of Corpus luteum
3. Indicators of ovulation
4. Mechanism of Parturition
5. Female contraceptive methods
6. Hormones acting on Breast
7. Pregnancy tests + physiological basis
8. Feto maternal units/Feto-placental unit
9. Lactation
10. Spermatogenesis +hormones
11. hCG
12. Castration in males and females before and after puberty
13. Testosterone
14. Placenta
15. Ovulation + tests
16. Oral contraceptives
17. Puberty
18. LH surge
19. ~~Tests for fertility in males and females~~
20. Contraceptive methods
21. Milk ejection reflex
22. IUCD
23. Endometrial changes in secretory phase
24. Sertoli cell functions

EXCRETION

ESSAYS

1. Countercurrent mechanism
2. Concentration of Urine + ~~renal function tests~~
3. GFR + inulin clearance
4. Mechanism of urine formation
5. Filling and emptying of urinary bladder+ micturition reflex + cystometrogram
6. ~~Artificial kidney~~

SHORT NOTES

1. JGA + functions
2. Cystometrogram
3. Tubuloglomerular feedback
4. Reabsorption of water from kidneys
5. Acidification in urine
6. ~~Vasa recta~~
7. ADH
8. Diuretics
9. Renal clearance
10. P amino hippuric acid
11. Renin angiotensin mechanism
12. Renal threshold
13. ~~Phosphate buffer in kidneys~~
14. ~~Thiocyanate space~~
15. Renal circulation
16. ~~Abnormalities of micturition~~
17. Transport maximum
18. Dialysis

BLOOD

ESSAYS

1. Haemostasis
2. Immunity
3. Erythropoiesis and factors controlling it
4. Role of platelets in coagulation + anticoagulants
5. Plasma proteins
6. Coagulation + haemophilia + haemorrhagic factors
7. Blood Groups

SHORT NOTES

1. Lymph
2. ~~Immunoglobulin – formn and funct~~
3. ~~Albumin : Globulin Ratio~~
4. Plasma Volume -determination
5. Erythroblastosis fetalis
6. Thrombocyte
7. Functions of blood
8. ~~B lymphocytes~~
9. Erythropoietin

10. Calcitonin
11. ~~T lymphocytes~~
12. Blood transfusions
13. Haemophilia
14. RBC life span
15. Plasmapheresis
16. Diff b/w humoral and cellular immunity
17. ~~Osmotic potential + albumin~~
18. Fibrinolytic system
19. Anti-coagulants

MUSCLE

ESSAYS

1. Smooth muscle and skeletal muscle diff
2. Skeletal Muscle

SHORT NOTES

1. Sarcotubular system
2. Sarcomere
3. Tetany
4. Neuromuscular junction
5. Muscle proteins
6. Ca2+ role in muscle contraction
7. Sliding filament theory
8. ~~Neuromuscular blocking agents~~
9. Fatigue in skeletal muscle
10. Molecular basis of muscle contraction
11. EC coupling
12. Rigor mortis
13. Excitable tissue – properties
14. RMP in a single muscle fibre
15. Diff b/w single and multi unit muscle fibres
16. Isotonic, isometric, preload and afterload contractions
17. Diff. Between skeletal, cardiac and smooth muscle

MISCELLANEOUS

1. ECF+ body fluid compartments
2. Transport mechanisms across cell membrane
3. Carrier mediated transport
4. Action Potential and its ionic basis
5. Saltatory conduction
6. ~~Functions of skin~~
7. Cytoskeleton
8. ECF volume
9. ECF measurement
10. Facilitated diffusion
11. ECF regulation
12. Tissue fluids
13. Gating of channels
14. Compound action potential
15. Neuroglia functions
16. Nerve fibre classification
17. Refractory period
18. Intercellular concentration
19. Thermoregulation by skin
20. 2nd messengers
21. Action potential
22. ~~Sweat glands~~
23. ~~BMR~~
24. Na K pump
25. Starling forces and oedema
26. Neurohumoral reflexes
27. Negative feedback mechanism
28. G-protein
29. Autoimmune diseases
30. Hypothalamic thermostat
31. Functions of skin

PAPER 2

CVS

ESSAYS

1. Cardiac cycle + mechanical changes during cardiac cycle + heart sounds + pressure changes in aorta, left ventricle and atria.
2. BP + normal value + regulation + hypertension +measurement
3. Cardiac Output + regulation + MCI
4. ECG + abnormalities + lead 2
5. Heart innervations + Regulation of Heart rate + Arrhythmias

6. Cardiac impulse + Heart Block + Conducting System + AP of ventricular muscles+ Pacemaker potential
7. Hypovolemic Shock + Compensatory mechanisms
8. Pulmonary circulation + regulation
9. Foetal Circulation + PDA
10. Marey's law + Reflexes based on it
11. Vasomotor centre (input, output, functions)
12. Mechanism of blood flow to diff organs
13. Properties of cardiac muscle + physiological significance+ refractory period
14. Regulation of blood pressure

SHORT NOTES

1. Coronary blood flow
2. Heart sounds
3. Korotkov's Sound
4. Heart failure
5. Mean arterial and pulse pressure
6. JVP
7. P-R interval
8. [illegible]
9. Arterial pulse
10. Microcirculation
11. Heart rate
12. Conducting tissue of Heart
13. ST segment
14. Starling's force (of capillaries)
15. Carotid body
16. Triple response
17. All or none law
18. Circulation time
19. Fick principle
20. Ventricular action potential
21. Frank-Starling's law
22. Vaso vagal syncope
23. [illegible]
24. [illegible]
25. Refractory period
26. Isometric contraction phase of ventricle
27. Cardiac reserve
28. Auto rhythmicity in cardiac muscle.
29. Peripheral resistance.
30. Venous return.
31. Cardio-vascular changes during exercise.
32. S.A. node. And pacemaker potential
33. Myasthenia gravis
34. Baroreceptor mechanism
35. Chemoreceptor mechanism
36. Long term regulation of BP
37. CNS Ischaemic control of BP
38. Kirchoff's law and Einthoven's law
39. Endothelins
40. Hypovolemic Shock
41. Cardiac Index

CNS

ESSAYS

1. CEREBELLUM + functional divisions + structure,

connections, and functions + cerebellar lesions , disorders

2. Ascending tracts +pain pathway + referred pain

3. Stretch reflex + muscle spindle + reciprocal inhibition

4. Basal Ganglia

5. Functions of Hypothalamus and its connections

6. Descending tracts + Pyramidal tracts + effects of lesions

7. Synapse + mechanism of transmission + properties + central neurotransmitters

8. CSF

9. Reflex arc diagram + muscle tone maintenance

10. Reticular formation

11. Diagram of primary and association areas of cerebral cortex + connections of frontal lobe

12. Fine touch pathway + sensory homunculus

13. Internal capsule + its lesion effects

Properties, laws of Projection, Weber-Fechner law.

14. Receptors + classification + properties
15. Brown-Sequards' syndrome

SHORT NOTES

1. Rem & non rem sleep
2. Chronaxie rheobase
3. Parkinson's disease
4. Decerebrate rigidity + Decorticate
5. Function of parietal lobe
6. Function of thalamus
7. Electroencephalograph : waves
8. Conditioned reflex : Types
9. Salutatory conduction
10. Blood brain barrier
11. Wallerian degeneration
12. Nerve fibres classification
13. Lateral hemisection of spinal cord
14. Monosynaptic reflex
15. Somaesthetic cortex
16. Occlusion and subliminal fringe, Summation
17. [illegible] sleep
18. Receptors adaptation
19. Papez circuit : Limbic System
20. Conditioned reflex
21. Dorsal column-lemniscal system.
22. Antero-lateral sensory system.
23. Central analgesic system (Brain opiate system or Brain analgesic system.
24. Effects of posterior nerve root lesions.
25. Effects of anterior nerve root lesions.
26. Visceral pain.
27. Functions of gamma neurons.
28. Primary motor area.
29. Physiology of memory.
30. Functions of limbic system.
31. Slow wave sleep.
32. E.E.G Rhythms.
33. Aphasias
34. Central connections of trigeminal nerve.
35. Lower motor neuron lesion/ upper motor neuron lesion : Diffrence
36. Withdrawal reflex.
37. Inverse stretch reflex.
38. Reciprocal inhibition.
39. Frontal lobe syndrome. • Mass - Reflex
40. Crossed extensor reflex.
41. Righting reflexes.
42. Complete transection of spinal cord
43. Strength - Duration curve (SD curve)
44. Saturday night palsy
45. Phantom limb
46. EPSP and IPSP
47. Gamma motor neuron
48. Action potential
49. Neuroglia
50. Mechanism of conduction + saltatory

51. Triple response
52. Aphasia
53.
54. Induction of sleep
55. Decorticate rigidity
56. Climbing, Mossy and parallel fibres
57. Role of Purkinje cells in cerebellum
58. Vestibulocerebellum
59. Syndrome
60.
61. Classify Memory
62. Classical Conditioning
63. Operant Conditioning

SPECIAL SENSES

1. Otolith organ
2. Refractive errors of the eye
3. Visual pathway +lesions *
4. Travelling wave theory*
5. Theories of hearing
6. Accommodation of the eye
7. Explain ‘Dark Adaptation’
8. Organ of corti
9. Pupillary light Reflexes.
10. Taste pathway
11. Middle ear
12. Colour blindness
13.
14. Aqueous humour
15.
16.
17. Colour vision
18. Olfactory pathway
19. Taste buds
20. Hearing tests + Rinne’s
21. Visual acuity
22. Basilar membrane
23. Attenuation reflex
24. Macula lutea
25. Near response
26. Light reflexes +pathways
27. Retina
28. Intra ocular fluids
29. Photoreceptors
30. Audiometry
31. Crista, macula
32. Vestibular apparatus
33. Organ of corti

RESPIRATION

ESSAYS

1. neural regulation of respiration+ periodic breathing + herring breur reflex **
2. hypoxia +types +oxygen therapy + acclimatization
3. Chemoreceptors + chemical control of breathing+ cheyne stokes breathing
4. Differentiate between Types of Respiratory Failure
5. Differentiate between Obstructive and Restrictive Respiratory Diseases

SHORT NOTES

1. CO_2 transport
2. O_2 transport
3. Lung function tests
4.
5. Compliance of lungs
6. Artificial respiration
7. Lung volumes and capacities*
8. Surfactant**
9. Chloride shift
10. Timed vital capacity
11. O_2 dissociation curve
12. Non respiratory functions of lungs
13. Spirogram
14. Dysbarism/Decompression sickness
15. Maximum breathing capacity
16.
17. Functional Residual Capacity
18. Periodic breathing
19. Acclimatization
20. V/Q ratio
21. Cyanosis
22. Voluntary hyperventilation
23. Dyspnoeic index
24. Residual Volume
25. Airway Resistance
28. Timed vital capacity
29. Gas exchange in lungs
30. Dead space*
31. Cough reflex
32. Caisson’s disease