

SYLLABUS, ToS & OSPE

M.B.B.S.

FIRST PROFESSIONAL

PART-II

PHYSIOLOGY

PHYSIOLOGY (MBBS 1st Prof. Part-II)

At the end of the course the student should be able to:

Body Fluids and Kidney

1. Describe the components and quantitative measurements of body fluids.
2. Discuss the different fluid compartments, tissue and lymph fluid.
3. Describe the structure of the kidney and nephron, and explain general functions of the kidney.
4. Describe the GFR and its regulation.
5. Describe the formation of urine including filtration, re-absorption and secretion.
6. Discuss plasma clearance.
7. Describe the mechanism of concentration and dilution of urine
8. Describe regulation of osmolality, water balance and acid base balance
9. Describe the role of the kidney in blood pressure regulation.
10. Describe the hormonal functions of the kidney.
11. Describe acidification of urine and its importance.
12. Describe the mechanism of micturition and its control.

Applied Physiology:

Understands:

1. Renal plasma clearance tests and their clinical significance.
2. Dehydration, rehydration, overhydration and oedema.
3. Renal failure and dialysis.
4. Metabolic acidosis and alkalosis.
5. Abnormalities of micturition.

Nervous System

1. Describe general organization of the nervous system.
2. Describe the properties of synaptic transmission.
3. Classify the neurotransmitters and explain their functions.
4. Explain neuropeptides and their functions
5. List the types and describe the properties and functions of sensory receptors.
6. Describe the pathways for transmission of somatic sensations
7. Define reflex action. Classify and describe reflexes

8. Describe the muscle spindle and Golgi tendon organ. Explain their functions.
9. Describe the physiology of pain and analgesia system.
10. Explain the functions of the cerebral cortex.
11. Differentiate between the sensory and motor cortex and their functions.
12. Describe the motor pathways including pyramidal and extrapyramidal.
13. Describe basal nuclei (basal ganglia) and their functions.
14. Describe cerebellum and its function.
15. Describe the functions of vestibular apparatus.
16. Explain the organization and functions of reticular formation.
17. Explain mechanism and regulation of the muscle tone.
18. Describe the control of posture and equilibrium.
19. Explain the physiology of sleep.
20. Describe the physiology of memory.
21. Describe the mechanism and control of speech.
22. Discuss the functions of thalamus
23. Discuss the functions of hypothalamus
24. Explain the components and functions of limbic system.
25. Describe the production, circulation, absorption and functions of CSF.
26. Describe the blood brain and blood CSF barriers and their clinical significance.
27. Describe the organization and functions of the autonomic nervous system.

Applied Physiology

Understands:

1. Significance of dermatomes.
2. Injuries of the spinal cord.
3. Hemiplegia and paraplegia.
4. Diseases related to Basal ganglia.
5. Effects of cerebellar dysfunction.
6. Hydrocephalus.
7. Alzheimer's disease.
8. Speech disorders
9. Sleep disorders.
10. Clinical abnormalities of pain.

Endocrinology

1. Classify the hormones and describe mechanism of their action
2. Name the hormones secreted by the anterior and posterior pituitary and describe their regulation and functions.
3. Describe the neuroendocrine functions of the hypothalamus
4. Describe the physiological changes of growth and aging.
5. Describe the functions and regulation of the hormones secreted by thyroid gland.
6. Describe the hormones regulating calcium homeostasis (parathormone, vitamin D and calcitonin)
7. Name the hormones secreted by the adrenal cortex and describe their functions and regulation.
8. Name the hormones secreted by the adrenal medulla and describe their functions and regulation.
9. Describe the endocrine functions of the pancreas and regulation of pancreatic hormones.
10. Describe the endocrine functions of pineal gland.

Applied Physiology

Understands:

1. Acromegaly, gigantism and dwarfism.
2. Effects of panhypopituitarism.
3. Diabetes insipidus.
4. Thyrotoxicosis, myxoedema and cretinism
5. Pheochromocytoma.
6. Cushing's disease / syndrome.
7. Addison's disease.
8. Hypocalcemia and hypercalcemia.
9. Adrenogenital syndrome.
10. Conn's syndrome.
11. Diabetes mellitus and hypoglycaemia.

Gastrointestinal Tract

1. Describe the general functions of gastrointestinal tract.
2. Describe the enteric nervous system, control of gastrointestinal motility and secretion
3. Describe mastication, swallowing and their control

4. Describe the motility of the stomach, small intestine, large intestine and regulation.
5. Describe the functions of GIT hormones
6. Describe gallbladder motility and its regulation
7. Explain mechanism of vomiting and its control pathway
8. Explain defecation and its control pathway

Applied Physiology

Understands:

1. Dysphagia
2. Achalasia cardia
3. Diarrhea and constipation
4. Megacolon

Reproduction

1. Describe the functions of the male reproductive system.
2. Describe the mechanism of erection and ejaculation.
3. Describe the production and function of testosterone.
4. Describe the physiological changes during male puberty.
5. Describe the function of the female reproductive system.
6. Explain the production and function of oestrogen and progesterone.
7. Describe the functions of hypothalamo-hypophysio-gonadal axis.
8. Describe the ovarian and endometrial cycle.
9. Describe the physiological changes during female puberty and menopause.
10. Discuss pregnancy and explain the physiological changes taking place in the mother.
11. Describe the functions of placenta.
12. Discuss the hormones regulating parturition, lactation and development of breast.

Applied Physiology

Understands:

1. Male infertility.
2. Female infertility.
3. Postmenopausal syndrome / Andropause.

4. Contraception.
5. Basis for pregnancy tests.
6. Hypogonadism / hypergonadism.
7. Cryptorchidism.

Special Sense

1. Describe the optics of the eye, mechanism of accommodation, light reflex.
2. Explain visual acuity, depth perception, neural functions of the retina.
3. Describe the errors of refraction and their corrections.
4. Describe the secretion, circulation, drainage and functions of aqueous humor.
5. Describe the movements of eyeballs.
6. Describe the visual transduction, color vision, visual cortex and visual pathway.
7. Describe the mechanisms for the light and dark adaptation.
8. Describe the functions of external ear.
9. Enumerate the contents of middle ear cavity and functions of the middle ear
10. Describe the structure and functions of internal ear.
11. Explain the determination of the sound frequency, loudness, direction of sound, auditory pathway and auditory cortex.
12. Describe the signal transduction for hearing.
13. Describe the signal transduction for taste and smell.
14. Describe the pathways for the sense of taste and smell.

Applied Physiology

Understands:

1. Types of deafness.
2. Errors of refraction.
3. Lesions of the visual pathway.
4. Night blindness.
5. Colour blindness.
6. Squint.
7. Argyll Robertson pupil.
8. Horner's syndrome.
9. Abnormalities of sense of smell and taste.
10. Glaucoma.

PHYSIOLOGY PRACTICAL

Nervous System

1. Examination of superficial reflexes.
2. Examination of deep reflexes.
3. Examination of motor system.
4. Cerebellar function tests.
5. Examination of sensory system.
6. Examination of 12 cranial nerves (3-4 settings).

Special Senses

1. Plotting of the field of vision (perimetry and confrontational methods).
2. Testing the visual acuity for near and distant vision.
3. Elicitation of light reflex (direct and consensual) and accommodation reflex.
4. Ophthalmoscopy.
5. Testing the colour vision.
6. Testing for hearing.
7. Testing taste and smell.

Pregnancy Tests

RECOMMENDED BOOKS

1. **Textbook of Physiology** by Guyton and Hall, Latest Ed.
2. **Review of Medical Physiology** by William F. Ganong, Latest Ed.

REFERENCE BOOKS

1. **Human Physiology** by Laurali Sherwood
2. **Physiology** by Berne and Levy, Latest Ed.
3. **Essentials of Medical Physiology** by Prof. Dr. Mushtaq Ahmad
4. **Physiology** by Linda and Constanzo

MBBS FIRST PROFESSIONAL (Part-II)

PHYSIOLOGY

Objectively Structured Performance Evaluation (OSPE)

(Total Marks: 90)

The structure of OSPE/ Practical/ Viva should be as follows:

➤ **Viva Voce (35 marks)**

- Internal ----- 15 marks
- External ----- 20 marks

➤ **OSPE (25 marks)**

- Non-observed stations 10 of 01 marks each (2 minutes each)
- Observed stations 03 of 05 marks each (4 minutes each)

30% C1 }
40% C2 } OSPE
30% C3 }

➤ **Practical (30 marks)**

- Practical 20 marks
- Procedure Writing 05 marks
- Yearly Workbook Assessment 05 marks