



All India Institute of Medical Sciences, Kalyani
1st Professional MBBS Examination 2020

Time: 3 Hrs.

Physiology (Paper-II)

Marks: 100

INSTRUCTIONS:

- Answer all questions and draw well labelled diagrams wherever necessary.
- Answer Sections A and B in separate answer booklets.
- Write answers in sequence and strike off all blank pages

SECTION A (50 Marks)

1. With the help of a suitable diagram, depict the mechanisms of insulin secretion from the β cells of pancreas in response to glucose. Briefly describe the actions of insulin on lipid metabolism. Explain the pathophysiological basis of hyperphagia and hyperdipsia in diabetes mellitus. (2+4+2+2=10)
2. Draw and explain a Neuroendocrine reflex using a suitable example. (5)
3. List the steps of spermatogenesis. Briefly describe the factors affecting spermatogenesis. (2+3=5)
4. Explain the physiological basis of hypocalcemic tetany and describe its clinical features. (2+3=5)
5. Explain the mechanism of glomerular filtration. What is Filtration fraction? (4+1=5)
6. Describe the anti-allergic and permissive actions of cortisol. (3+2=5)
7. Explain how anterior pituitary and ovarian hormones regulate bleeding, proliferative and secretory phases of menstrual cycle. (3+2=5)
8. Describe the renal handling of glucose along with graphical representation with respect to filtration, transport and excretion. (5)
9. Explain the renal counter current exchange mechanism with a suitable illustration. (5)



SECTION B (50 Marks)

1. With the help of a neat labelled diagram describe the origin, course, termination and functions of corticospinal tract. Explain the features and their basis, if this tract along with oculomotor nerve is damaged at midbrain. (1+3+2+2+2=10)
2. Explain the neural mechanism of endogenous pain inhibition. Add a note on Brown-Sequard syndrome. (3+2=5)
3. Represent diagrammatically the different components of mammalian muscle spindle, and its neural connection with spinal segment. Indicate also the various supra-segmental influences on it. (3+2=5)
4. Enumerate the different EEG wave forms, along with their frequency and amplitude characteristics. Compare & Contrast NREM and REM sleep. (3+2=5)
5. Describe the motor features of Parkinson's disease. (5)
6. Describe with a suitable diagram, the path taken by the impulse when a subject name a visual object. (5)
7. Explain the mechanism of dark adaptation. With the help of flow charts, show the pathway of light reflex and consensual light reflex. (3+1+1=5)
8. Explain the mechanism by which middle ear matches the impedance offered by the fluids in the inner ear. Describe the mechanism of caloric stimulation of semi-circular canals. (3+2=5)
9. Briefly describe the physiological effects of Pranayama and Surya namaskar on various systems of human body. (4+1=5)