

PAPER CODE: MB2019106

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MBBS FIRST YEAR SUPPLEMENTARY EXAMINATIONS: NOVEMBER, 2025

PHYSIOLOGY
PAPER – II

Time: 3 Hours**Max Marks: 100****Note:** Answer all questions

Give Diagrammatic representation wherever necessary

Multiple Choice Questions:**10 X 1 = 10**

- Which of the following cells receives direct synaptic input from Golgi tendon organs,
 - Type Ia inhibitory interneurons
 - Dynamic gamma motor neurons
 - Alpha motor neurons
 - Type Ib inhibitory interneurons
- Which of the following explains why individuals in severe pain have difficulty sleeping without sedative medication?
 - The somatosensory cortical area for pain perception blocks the sleep-generating circuits
 - Pain fibres entering the dorsal horn and the ascending pain pathways block the sleep-generating circuits
 - Ascending pain pathways provide excitatory input to brainstem reticular formation areas that are involved in maintenance of the alert, waking state
 - The neurotransmitters used in the slow pain pathway diffuse to neighbouring cell groups and generally raise the excitability of the brain
- Which of the following is a characteristics of myelinated nerve fibres?
 - Decreased velocity of nerve impulse
 - Saltatory conduction
 - Increased energy requirement to maintain ion gradients
 - Increased membrane capacitance
- Which of the following hormones lowers plasma level of ionized calcium?
 - Calcineurin
 - Calcitonin
 - Parathyroid hormone
 - PTH related peptide
- True precocious puberty differs from pseudo precocious puberty in all of the following except:
 - Early development of secondary sexual characters
 - Presence of gametogenesis
 - Normal pubertal pattern of Gonadotrophin secretion from posterior pituitary
 - More common in females
- The mechanism of action of contraceptive pills is based on:
 - By inhibiting ovulation
 - By increasing the motility of fallopian tube
 - By decreasing motility of sperms
 - It blocks the entry of sperm into fallopian tube
- Excitation contraction coupling in skeletal muscle involves all of the following events EXCEPT
 - ATP hydrolysis
 - Binding of Ca^{+} to calmodulin
 - Conformational change in dihydropyridine receptor
 - Depolarization of the transverse tubule (T tubule) membrane

8. Olfactory receptor cells belong to which group of cells?
- Bipolar neurons
 - Fibroblasts
 - Modified epithelial cells
 - Pseudo unipolar neurons
9. Which of the following is NOT a characteristics of an action potential
- Refractory period
 - Conductivity
 - Accommodation
 - Graded response to increasing strength of stimuli
10. In excitable cells, repolarization phase is caused due to
- Na⁺ efflux
 - Na⁺ influx
 - K⁺ efflux
 - K⁺ influx

Essay/ Long Answer Questions:**2 X 15 = 30**

11. A young male met with accident. He is brought to the hospital. On examination he is conscious and coherent. He is unable to move his right upper limb and lower limb. Pain touch sensations were not elicited. The doctor give a provisional diagnosis of spinal injury.
- Describe Spinal injury and add a note on types of spinal injury.
 - Describe ascending and descending tracts and enumerate the sensations they carry.
 - Discuss in detail about Brown Sequard Syndrome.
 - List the differences in UMNL and LMNL. (3+6+4+2)
12. A 55 years old male comes to a physician with complaints of fatigue, increase in frequency of voiding urine, taking excess food frequently since last 6 months. On examination of blood sample. FBS- 140 mg/dl, PPBS- 285 mg/dl, HbA_{1c} levels – 8%
- Identify the condition in the discussed case.
 - Write in detail about the structure and bio synthesis of the hormone involved.
 - Add a note on mechanism of action of hormone and enumerate the actions of hormone.
 - Add a note on the Characteristic features of NIDDM. (2+5+6+2)

Short Answer Questions:**7 X 6 = 42**

- Discuss the regulation of Body temperature.
- Write the properties of Synapses. Add a note on Indirect Inhibition.
- List the types of Aphasia.
- List the Placental Hormones and briefly explain their functions.
- Discuss Refractory errors in detail.
- Describe the functions of Testosterone.
- Mechanism of smooth muscle contraction.

Very Short Answer Questions:**6 X 3 = 18**

- Demonstrate the roles of an Indian medical graduate and relate it to the societal impact.
- Enumerate the functions of Thalamus.
- Physiology of aging
- Nerve growth factors
- Discuss about Audiometry.
- Describe about Addison's disease. List the manifestations of it.
