

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

1. Actin is tethered to Z-lines in the sarcomere by:
 - a) Actinin
 - b) Titin
 - c) Nebulin
 - d) Dystrophin
2. Rigor mortis is due to:
 - a) Damage to actin and myosin
 - b) Rapid sequestration of Ca in ER
 - c) Increased myosin ATPase
 - d) ATP depletion
3. The condition of prosopagnosia usually results from Dysfunction or damage to which area of the cerebral cortex?
 - a) Prefrontal area
 - b) Junction of parietal and temporal lobe on nondominant side of the brain
 - c) Inferior temporal lobes
 - d) Frontal eye fields
4. Which of the following reflexes is correctly paired with the sensory structure that mediates the reflex?
 - a) Reciprocal inhibition-Golgi tendon organ
 - b) Golgi tendon reflex-Meissner corpuscle
 - c) Stretch reflex-muscle spindle
 - d) Reciprocal inhibition-Pacinian corpuscle
5. Which of the following systems conveys information concerning highly localized touch sensation and body position (proprioceptive) sensation?
 - a) Anterolateral system
 - b) Dorsal column-medial lemniscal system
 - c) Corticospinal
 - d) Spinocerebellar
6. Which of the following is not a component of the near response?
 - a) Pupillary constriction
 - b) Convergence of the visual axes
 - c) Increase in convexity of the lens
 - d) Ciliary muscle relaxation
7. The auditory pathway passes via all except:
 - a) Cochlear nuclei
 - b) Superior olivary nucleus
 - c) Trapezoid body
 - d) Superior colliculus
8. Insulin dependent glucose uptake into skeletal muscle and adipose tissue is mainly mediated by:
 - a) GLUT 1
 - b) GLUT 2
 - c) GLUT 3
 - d) GLUT 4
9. Menstruation is caused by
 - a) Surge of LH Prior to midcycle
 - b) Failure of corpus luteum to involute
 - c) Sudden reduction in oestrogen and progesterone at the end of the ovarian cycle
 - d) Excessive secretion of oestrogen and progesterone at the end of the ovarian cycle

10. During the week following ovulation, the endometrium increases in thickness to 5 to 6 millimetres. What stimulates this increase in thickness?
- | | |
|--|-------------------------------------|
| a) Luteinizing hormone | b) Oestrogen from the corpus luteum |
| c) Progesterone from the corpus luteum | d) Follicle-stimulating hormone |

Essay/ Long Answer Questions:

2 X 15 = 30

11. A 35-year-old man comes to his physician because of changes in his appearance. His hands and feet have been growing and his brow and chin are also becoming larger. On examination the patient did not see the fingers of the examiner when they were moved in either superior temporal visual field. Detailed visual field examination by an ophthalmologist revealed a visual field defect in both temporal fields but the defect was more complete in superior rather than in inferior quadrants. The patient was referred to a neurosurgeon for treatment. Based on this information answer the following questions.
- Name the hormone which is being secreted in excess.
 - Explain the mechanism of action of hormone involved.
 - Enumerate the metabolic function of this hormone.
 - Explain the underlying mechanism of changes in the patient's appearance.
 - What could be the cause for visual defect. (2+4+4+3+2)
12. A 32-year-old woman presents to her primary care physician's office with difficulty in chewing food, she states that when she eats certain foods that require a significant amount of chewing, her jaw muscle becomes weak and tired. After a period of rest, her jaw muscle regains its strength until she eats again.
- What is your diagnosis.
 - Explain the events of transmission at NMJ.
 - Treatment of the condition.
 - List out neuro muscular blockers.

(2+5+4+4)

Short Answer Questions:

7 X 6 = 42

- Describe the different properties of action potential.
- Mechanoreceptors
- Describe three functional divisions of the cerebellum. Assign functions to each.
- State the difference between various types of memories.
- Describe the process involved in pain modulation.
- Describe the role of hormones in sex determination and sex differentiation.
- Indicators of Ovulation.

Very Short Answer Questions:

6 X 3 = 18

- Describe light reflex.
- Combined contraceptive pills.
- Draw Olfactory pathway.
- Barriers of effective communication.
- Weber- Fechner Law.
- Define Electroencephalogram (EEG) what are the waves seen during REM sleep.
