

**M. Sc. 2nd Semester Examination, 2025**

**HUMAN PHYSIOLOGY**

*(Physiology of Excitable Cells and Higher  
Functions of Brain)*

**PAPER — PHY-206**

*Full Marks : 25*

*Time : 1 hour*

**Answer all questions**

*The figures in the right hand margin indicate marks*

*Candidates are required to give their answers in  
their own words as far as practicable*

**GROUP—A**

**Answer any two questions from the following :**

1. What is calsequestrin ? 2 × 2  
2

*( Turn Over )*

2. What are the dendritic spines ? 2
3. Why is REM sleep known as paradoxical sleep ? 2
4. Write the differences between habituation and sensitization. 2

**GROUP - B**

Answer any two questions from the following :

5. Differentiate between skeletal and smooth muscle contraction.  $4 \times 2$  4
6. Discuss the mechanism of short-term sensitization. 4
7. Name any two diseases that are related to specific ion channel mutations. Write on the two excitatory and two inhibitory neurotransmitters.  $2 + 2$

( 3 )

8. What is the region of brain responsible for the delta wave of NREM sleep ? Stimulation of which brain regions can induce sleep. 2 + 2

**GROUP - C**

Answer any one question from the following :

8 × 1

9. What are growth cones ? Discuss the cellular and molecular basis of long term memory formation. 3 + 5

10. Describe the process of smooth muscle contraction and relaxation. What will be the consequences of prolonged awakening or deprivation of sleep ? Which neurotransmitter is believed to be responsible for the transformation of NREM sleep to REM sleep ? 4 + 3 + 1

[ Internal Assessment — 05 Marks ]

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