

2011

M.Sc.

1st Semester Examination

HUMAN PHYSIOLOGY

PAPER—PHY-104

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

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

Illustrate the answers wherever necessary.

Unit—07

Answer any *two* questions.

1. (a) Discuss the properties of thalamic cells with special reference to voltage-gates calcium ion conductance.
- (b) How does protein malnutrition affect thalamic projection of hippocampus ? 5+5

(Turn Over)

2. (a) Explain the microcircuits of the cerebellar cortex with special emphasis on Purkinjice Cells. 6+4
- (b) Outline the motor, cortical control of motor function.
3. (a) Give a complete outline of brain-stem centers concerned with motor functions.
- (b) Explain with diagrams the discharges mode from different descending tracts during walking. 5+5
4. (a) Describe the structure and neural connections of muscle spindle.
- (b) What is misalignment detector ? Discuss the "Follow-up-length servo" mechanism of muscle spindle activity. 4+(1+5)

Unit—08

Answer any *two* questions.

1. (a) What is electrical synapse ? Discuss its molecular structure mentioning its unique features.
- (b) Write brief note on neuromodulation in synaptic transmission. 2+5+3

2. (a) Discuss Loewi's experiment to advocate chemical neurotransmission.
- (b) Calcium ion is essential for chemical neurotransmission. - Justify it.
- (c) Write briefly on excitation-exocytosis coupling with special note on 7s and 20s complex formation. 2+3+5
3. (a) Discuss the cellular basis for habituation and sensitization involved in reflex learning.
- (b) State the cellular and molecular mechanism of memory formation with special reference to Kinase-phosphatase equilibrium at synapse. 5+5
4. (a) Describe different types of intero-exteroceptive conditioning.
- (b) What is operant conditioning? Discuss different types of reinforcement schedule in operant conditioning. 5+(3+2)
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