

**PHYSIOLOGY**

**PAPER – III**

Time : 3 hours  
Max. Marks : 100

PHY/D/17/36/III

**Important instructions:**

- Attempt all questions in order.
- Each question carries 10 marks.
- Read the question carefully and answer to the point neatly and legibly.
- Do not leave any blank pages between two answers.
- Indicate the question number correctly for the answer in the margin space.
- Answer all the parts of a single question together.
- Start the answer to a question on a fresh page or leave adequate space between two answers.
- Draw table/diagrams/flowcharts wherever appropriate.

Write short notes on:

1. a) Draw a labeled diagram of neuro muscular junction in smooth muscle. 3+5+2
  - b) Molecular basis of smooth muscle contraction.
  - c) Plasticity in smooth muscles
2. A. Sensory transduction in: (2+4+2)+2
    - a) Mechanoreceptors
    - b) Cochlear hair cells
    - c) Taste buds
  - B. Weber-Fechner Law
3. a) Define learning and memory. 2+5+3
  - b) Classification of memory and their neural basis.
  - c) Alzheimer's disease
4. a) Draw a schematic diagram to trace the pain pathway 3+3+4
  - b) Types and qualities of pain
  - c) Central inhibition of pain
5. a) What are the association areas of cerebral cortex and where are they located? 4+6
  - b) Functions of various association areas
6. a) Draw a schematic diagram of Papez circuit 4+6
  - b) What is the role of limbic system in regulation of rage and fear?
7. a) Enumerate the properties of synapses 2+5+3
  - b) Direct and indirect inhibition of synapses
  - c) Long term potentiation and depression.

**P.T.O.**

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| 8.  | a) List the postural reflexes integrated at the level of spinal cord, medulla, midbrain and cortex | 4+3+3 |
|     | b) Hemisection of spinal cord  |       |
|     | c) Decerebrate rigidity  |       |
| 9.  | a) Differentiate between REM and NREM sleep  | 6+4   |
|     | b) Mechanism of alerting response  |       |
| 10. | a) Biological rhythms in humans  | 7+3   |
|     | b) Physiological basis of Jet lag.   |       |

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