

PHYSIOLOGY

PAPER-III

Time: 3 hours
Max. Marks:100

PHY/J/20/36/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) Explain the process of circadian entrainment of human cells. 7+3
b) Physiological basis of Jet Lag.
2. a) Classify the hormones based on their chemical nature. 2+4+4
b) Synthesis of steroid hormones.
c) Cellular mechanism of action of steroid hormones.
3. a) Sensory coding. 2+4+4
b) Essential elements of sensory coding.
c) Coding of pitch, loudness and timbre in the auditory pathways
4. a) What are the functions of insulin-like growth factors? 2+3+5
b) Write in brief about their mechanism of their action.
c) Explain the various pathophysiologic causes of dwarfism.
5. a) Use a well labelled diagram to illustrate the course of dorsal column-medial lemniscal pathways and enumerate the sensations carried by it. 6+4
b) Interpretation and physiological basis of Romberg test.
6. a) Enumerate the factors that increase the secretion of aldosterone. 2+4+4
b) What is the principal site and cellular mechanism of action of aldosterone?
c) Enumerate clinical features of Addison's disease and give the physiologic basis of its treatment.
7. a) Describe the factors that increase water intake by thirst mechanism. 5+5
b) Discuss briefly the synthesis and actions of oxytocin.
8. Describe the signal transduction pathways in: 4+4+2
a) Photoreceptors
b) Hair cells in cochlea
c) Odorant receptors
9. a) Structure and physiological significance of Blood-Testes Barrier. 3+5+2
b) Endocrine functions of testes.
c) Male hypogonadism.
10. a) With the help of a well labelled diagram, illustrate the changes in level of sex and trophic hormones in plasma during the entire normal human menstrual cycle. 6+4
b) Physiologic basis of hormonal contraception.
