

M.Sc. 4th Semester Examination, 2025

PHYSIOLOGY

(Human Physiology)

PAPER – PHY-401.1 & 401.2

Full Marks : 50

Time : 2 hours

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

PHY – 401.1

GROUP – A

Answer any two questions of the following : 2 × 2

- 1. Write down the name of any two receptors of metabolic intermediates and products.**

(Turn Over)

2. What is thyroglobulin iodination? Mention the functions of Thox-1 and Thox-2. 1 + 1
3. What is CASR? 2
4. Classify different types of goitres with examples. 2

GROUP – B

Answer any two questions of the following : 4 × 2

5. With a suitable diagram, state the synthesis of TRH with the structural organization of the TRH gene. What are the consequences of intravenous injection of TRH? 3 + 1
6. Describe the mechanism of thyroglobulin endocytosis. Which enzymes are involved in the proteolytic cleavage of thyroglobulin? 3 + 1
7. State the role of different transcription factors in pituitary development. Describe briefly the biosynthesis of parathyroid hormone. 2 + 2

8. What is pheochromocytoma ? With a suitable diagram, describe the membrane topology of TPO. 1 + 3

GROUP – C

Answer any one question of the following : 8×1

9. Describe how 'Ligand-dependent activation of nuclear receptor' is accomplished with special emphasis on the binding of coactivators. 5 + 3
10. Classify Cushing's syndrome. Mention the general characteristic features of it. Describe the controlling mechanism of the adrenal gland during the short-term stressor response (Fight or Flight). Briefly write down the functions of aldosterone during low blood pressure and low blood volume. 1 + 2 + 3 + 2

(4)

PHY - 401.2

GROUP - A

Answer any **two** questions of the following : 2×2

11. Write down the complications of endometriosis. 2
12. What are gonadal sex and pinopodes ? 1 + 1
13. What is implantation window ? 2
14. Write the full form of HIOMT ? Mention its functions. 1 + 1

GROUP - B

Answer any **two** questions of the following : 4×2

15. "A major symptom of endometriosis is recurring pelvic pain" - Why ? Mention the diagnostic methods of endometriosis. 3 + 1

16. Discuss briefly about the molecular basis of implantation. 1 + 3
17. Discuss the causes of the formation of ROS in human semen and the effect of ROS on sperm motility. 2 + 2
18. Briefly state the mechanism of action of 'combined' and 'progesterone-only' hormonal contraceptives. 2 + 2

GROUP – C

Answer any one questions of the following : 8 × 1

19. With a suitable schematic diagram, describe the pathway of melatonin bio-synthesis in the human pineal gland. Write down the protective mechanism of melatonin against breast cancer. State the progonadal functions of melatonin. 4 + 3 + 1

(6)

20. State briefly the three steps of spermatogenesis. Describe critically the different phases of spermatid differentiation. 4 + 4

[Internal Assessment — 10 Marks]
