

2023

M.Sc.

4th Semester Examination

HUMAN PHYSIOLOGY

PAPER : PHY-401.1 & 401.2

Full Marks : 20

Time : 1 hour

The figures in the right-hand margin indicate marks.

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

Illustrate the answers wherever necessary.

Answer from *any one* Section.

SECTION—I

(401.1)

Answer from **all** the Groups as directed.

GROUP—A

Answer *any two* questions from the following :

2×2=4

1. Mention the name of the receptors of classical hormones and vitamins.

(2)

2. What are Duox1 and Duox2 enzymes?
3. State the functional mechanism of aquaporin.
4. Mention the stimulatory factors for the secretion of aldosterone.

GROUP—B

Answer *any two* questions from the following :

4×2=8

5. Briefly discuss the synthesis of TRH with the structural organization of TRH gene. State the mechanism of action of TRH. 2.5+1.5=4
6. Briefly describe the role of thyroglobulin (Tg) in T3 and T4 synthesis. Mention the role of lysosomal enzyme for the proteolytic cleavage of Tg-hormone complex. 2+2=4
7. Discuss the actions of parathyroid hormone on bone with special reference to the interplay of different bone cell types. 4
8. What is glucose fever? How does the permissive action of GCC occur? Mention the names of several types of adrenergic receptors responsible for cardiovascular functions.

1+1+2=4

(3)
GROUP—C

Answer *any one* question from the following :

8×1=8

9. How do the 'Hormone binding' and 'Receptor Dimerization' processes of nuclear receptor occur?

4+4=8

10. With a suitable schematic diagram describe the biosynthesis of catecholamines. Describe in details, the regulatory mechanism of aldosterone in human body during decrease of blood pressure. What is fight or flight response?

3+4+1=8

SECTION—II

(401.2)

Answer from **all** the Groups as directed.

GROUP—A

Answer *any two* questions from the following :

2×2=4

1. What is the CAP phase of spermatid differentiation?

2

(4)

2. Write down the functions of angiogenic cell clusters during embryonic life of foetus. 2
3. What is the role of integrin in the implantation of blastocysts? Mention the significance of pinopodes in it. 1+1=2
4. Mention the name of diseases for which hormonal contraceptions are prescribed. 2

GROUP—B

Answer *any two* questions from the following :

4×2=8

5. What are the causes, risk factors and symptoms of Klinefelter syndrome? 2+1+1=4
6. Classify and explain the characteristics of primary biorhythm cycles. What do you mean by secondary biorhythms? What is intuitive pattern of biorhythms? 2+1+1=4
7. With a suitable diagram, describe the features of heart loop formation in the embryo. 4
8. Mention the causes of ectopic pregnancy. Describe in brief, the treatment protocol of endometriosis. 2+2=4

(5)
GROUP—C

Answer *any one* question from the following :

8×1=8

9. State critically the role of SRY, SOX9, WT1, SF1, DAX1, in testis determination. How does glucocorticoids (GCC) determine the time of parturition? 5+3=8
10. With a suitable schematic diagram, discuss the synthesis of melatonin in pinealocyte cell. Mention the pregonadal functions of melatonin. How are the pluripotent stem cells responsible for synthesis of specific growth factors, which leads to development of different tissues in the embryo? 3+2+3=8

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