

2019

MSc

4th Semester Examination

HUMAN PHYSIOLOGY

PAPER – PHY - 401

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.

1. Answer all questions following.

- a) What do you know about nuclear receptor dimerization ?
 b) Elaborate 'Ligand – dependent activation' by nuclear receptor. 2+3

Or

- a) Describe GHRH Synthesis from GHRH gene with suitable diagram.
 b) State critically the pituitary mediated function of GHRH.
 c) What are growth hormone releasing peptides? 2+(2+1)

2. a) Describe the development of human anterior pituitary gland and its cell lineage by transcription factors.
 b) Discuss briefly about the pituitary blood supply mentioning the relationship between hypothalamus and anterior pituitary. 3+2

Or

- a) Write down the chemical structure of arginine vasopressin (1+4)
 b) Critically comment on AVP mediated osmoregulation.

3. a) "Thyroid hormone increase active transport of ions through cell membrane"— Explain the statement.
 b) How is H_2O_2 generation system greatly involved in the oxidation of iodide?
 c) Write down the dual role of endopeptidases and exopeptidases at the time of proteolytic cleavage of thyroglobulin. (1+2+2)

Or

- a) What do you mean by 'glucose fever'?
 b) Explain briefly the permissive action of glucocorticoids.
 c) Schematically describe the role of aldosterone for the homeostatic maintenance of low blood pressure and volume. What is pheochromocytoma? (1+1+2+1)

4. a) State how parathyroid hormone gene and parathyroid cell number are regulated in our body.
 b) Mention critically the role of PTH on osteoblast surface proteins.

(1.5+1.5)+2

Or

- a) What are insulin receptor substrates?
 b) How Glut 4 mediated glucose transport is regulated by insulin?
 c) Describe the inhibition of insulin receptor signaling in our body? (2+1+2)

U – 34**Answer all questions from the following:**

1. a) What are chromosomal and phenotypic sex? Mention the causes of Klinefelter syndrome.
 b) Discuss the role of SRY gene, SF1, DAX1, SOX9 in testicular development. 1+1+3

Or

How does ovarian development occur by different transcription factors and hormones?

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2. a) Discuss briefly about the structural changes of the endometrium during implantation.
 b) Write in brief the role of matrix metalloproteinases and their inhibitors in the regulation of implantation.
 c) What is compactation? 2+2+1

Or

- a) Discuss about different types of biorhythm.
 b) What do you mean by Wisdom biorhythm?
 c) Write down the relationship between biorhythm and sex hormones. 2+1+2

3.

- What do you mean by 'hormonal contraception'. What is progestogen only formulations?
- Describe the side effects of combined hormonal contraceptives. (1+1)+3

Or

- Mention the sources of ROS in human reproductive system. State the physiological role of ROS in male reproductive system.
- How do ROS levels affect sperm mobility? $(1\frac{1}{2}+2)+1\frac{1}{2}$

4.

- Briefly describe the anatomical and histological organizations of pineal gland.
- Melatonin acts as a contraceptive – How?
- Explain shortly the progonadal action of melatonin. (2+1+2)

Or

- With a neat diagram describe shortly the formation of heart loop at the time of embryonic development.
- What is patent ductus arteriosus?
- Classify and explain the role of different growth factors during embryonic development. (2+1+2)