

2018**M.Sc.****4th Semester Examination****HUMAN PHYSIOLOGY****PAPER—PHY-401****Subject Code—30****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.

(Unit—33)

Answer all questions :

1. (a) State the domain structure of nuclear receptors.
- (b) Elaborate how target gene recognition is accomplished by nuclear receptors.
- (c) What do you mean by orphan receptor ? 2+2+1

Or

- (a) Illustrate the synthesis of TRH from TRH gene with proper diagram.
- (b) Describe the mechanism of action of TRH and its pituitary mediated functions. 2+(1+2)

(Turn Over)

2. (a) What do you know about pituitary stem cells ?
 (b) Discuss the control of hypothalamic-pituitary target organ axes with diagram. $2\frac{1}{2}+2\frac{1}{2}$

Or

- (a) Describe the chemical structure of prolactin.
 (b) Discuss about ligand dependent and independent dimerization of prolactin receptor. $1\frac{1}{2}+(2+1\frac{1}{2})$
3. (a) Discuss briefly the role of thyroxine binding globulin (TBG) for the transport of T_3 and T_4 .
 (b) State critically the mechanism of cellular uptake and intracellular binding of T_3 and T_4 . $2\frac{1}{2}+2\frac{1}{2}$

Or

- (a) Define Cushing's syndrome. Classify and explain the nature of the syndrome.
 (b) State the physiological effects of pheochromocytomas. What types of diagnosis are used against this disease. $(1+2)+(1+1)$
4. (a) Discuss about the secretion of parathyroid hormone with special emphasis on calcium sensing receptor.
 (b) State briefly the interplay of parathormone, thyrocalcitonin and 1, 25-DHCC in calcium homeostasis. $3+2$

Or

- (a) Describe the paracrine actions of insulin and glucagon.
 (b) "Secretion of insulin and glucagon is co-ordinated"—justify it.
 (c) State the insulin action in adipocytes. $1\frac{1}{2}+1\frac{1}{2}+2$

(Unit—34)

Answer all questions :

1. (a) What is bipotential gonad ?
 (b) How does testis determination occur ?
 (c) Discuss the genetic control of testis determination.

1+2+2

Or

- (a) Discuss on 'two-cell-two-gonadotrophin' hypothesis for ovarian steroidogenesis.
 (b) What is SRY gene ?
 (c) State the function of SRY gene in sex differentiation.

3+1+1

2. (a) What are the risk factors for ectopic pregnancy ?
 (b) Classify and explain the different stages of endometriosis.
 (c) What types of medications are prescribed against endometriosis.

1+2½+1½

Or

- (a) Discuss briefly the role of matrix metallo-proteinases (MMP) and MMP inhibitors in implantation process.
 (b) State briefly the endocrinology of parturition.
 (c) What is MUCI ?

2+2+1

3. (a) What is IUDS ?
 (b) State the non-hormonal IUDS.
 (c) Describe the mechanism and adverse effects of IUDS.
 1+1+(1+2)

Or

- (a) State how sperm apoptosis is dependent on oxidative stress.
 (b) Describe the role of antioxidants in sperm motility.
 3+2

4. (a) How does circadian clock is directly responsible for melatonin synthesis in pineal ocyte cells ?
 (b) "Melatonin used as an antigonadal compound"—
 Explain it. 3+2

Or

- (a) Critically state the primary changes in pulmonary and systemic vascular resistance at birth of neonate.
 (b) Briefly describe the weeks wise development of respiratory system of embryo. 2+3
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