

This question paper contains 4 printed pages]

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S. No. of Question Paper : 919

Unique Paper Code : 249503

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Name of the Paper : Hormone Biochemistry (BCHT-509)

Name of the Course : B.Sc. (Hons.) Biochemistry

Semester : V

Duration : 3 Hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *Five* questions in all, including

Question No. 1 is compulsory.

1. (a) Explain the following terms :

- (i) Paracrine response
- (ii) Organification of iodine
- (iii) Cross phosphorylation
- (iv) Biphasic secretory response.

1,2,1,1

(b) Give the full form and their physiological significance :

- (i) BMR and thyroxine
- (ii) GHRH and feedback regulation
- (iii) β ARK and regulation of hormonal response
- (iv) POMC and Hyperpigmentation

P.T.O.

(v) LH and ovulation

(vi) SH₂ and adaptor proteins

(vii) ANF and blood pressure.

7×2=14

2. (a) What is the biochemical basis for the following ?

(i) Mental retardation in cretinism

(ii) Ketosis in Type II diabetes

(iii) Hypokalemia and alkalosis in Conn's syndrome

(iv) Stick test to detect pregnancy

(v) Stress causing decreased lactation.

5×2=10

(b) How does vasopressin regulate blood pressure and blood volume ? What is the effect of vasopressin on renal tubular cells ?

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3. Comment on the following statements :

7×2=14

(a) Steroid hormones act as transcriptional regulators

(b) Hyperglycemia is not a confirmatory diagnosis of Diabetes mellitus

(c) Cholecalciferol plays a dual role in bone physiology

(d) Thyroxine is called a permissive hormone

- (e) Males have a higher muscle mass as compared to females
- (f) Beta blockers are administered to cardiac patients
- (g) There is crosstalk between Ca^{2+} and cAMP.
4. (a) Compare and contrast the effect of PTH and Calcitonin on plasma Ca^{2+} levels. How does calcium itself regulate the secretion of the two hormones ?
- (b) Explain the neuroendocrine integration of gastric acid secretion.
- (c) Explain the effect of cortisol on intermediary metabolism. 5,4,5
5. Outline with the help of a neatly labelled diagram of the following :
- (a) Hypothalamic hypophysial Axis.
- (b) The signal transduction pathway of the insulin receptor.
- (c) The juxtaglomerulus apparatus and regulation of aldosterone secretion. 5,5,4
6. Discuss briefly :
- (a) The role of different hormones in the initiation and progression of parturition.
- (b) Name the gas which is synthesized in the body and act as primary messenger.
- (c) Leptin regulates food intake. 5,5,4

7. (a) Explain the mode of action of the following toxins/drugs : 3×3=9
- (i) Pertussis toxin
 - (ii) Yersinia toxin
 - (iii) Phorbol esters.
- (b) Growth hormones show both a direct and indirect effect on growth and metabolism.
Explain. 5
8. Write short notes on :
- (a) Goitre
 - (b) The ovarian cycle
 - (c) Scatchard analysis. 5,5,4