

Sl. No. of Ques. Paper : 1315

F -7

Unique Paper Code : 2491501

Name of Paper : Hormones: Biochemistry and Function (Erstwhile FYUP)

Name of 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. Question No. 1 is compulsory.
Subparts of the questions should be attempted together.*

1. (a) Give an example of hormone which acts through:

(i) Tyrosine kinase receptor

(ii) Non-receptor Tyrosine kinase

(iii) G protein coupled receptor

(iv) Increase in cGMP.

1×4=4

(b) Comment on the following:

(i) Growth hormone can be considered a trophic hormone.

(ii) Increased stimulation of the receptor leads to its desensitization.

(iii) Nitric oxide acts as a signaling molecule

(iv) Lactation serves as natural contraceptive.

(v) IP3 and DAG are considered as secondary messengers.

(vi) Liver acts as endocrine organ.

1½×6=9

(c) Define the following:

(i) Polyphagia

(ii) Diuretic

(iii) Goitre

(iv) Ossification

(v) Negative feedback regulation

(vi) Natriuresis.

1×6=6

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2. Explain the role of the following:
- (a) SH2 domain in STAT protein
 - (b) PKB in cell survival
 - (c) Raf in MAP kinase pathway
 - (d) PKA in Glycogen breakdown
 - (e) GTPase activity in G protein
 - (f) Nuclear localization signal in steroid hormone receptor
 - (g) PH domain in PDK activation. 2×7=14
3. (a) What is the significance of LH surge in ovulation? 4
- (b) Give the function of LH and FSH in male reproductive system. 5
- (c) Write three examples of female contraceptives. Describe their mode of action. 5
4. Schematically represent the following:
- (a) Hypothalamic–hypophyseal portal system
 - (b) Synthesis of thyroxine
 - (c) Feedback control of Vit D synthesis
 - (d) Effect of cortisol on intermediary metabolism. 3½×4=14
5. (a) Give the mechanism of action of insulin on metabolism. 6
- (b) Why are epinephrine and norepinephrine considered stress hormones? 5
- (c) Explain the salient features of JAK–STAT pathway. 3
6. (a) Toxins from *Vibrio Cholera* exploit the host signal transducing mechanism to cause pathological symptoms. Explain.
- (b) Discuss the rennin angiotensin system and sodium homeostasis.
- (c) Compare and contrast PKA and PKC.
- (d) Explain the role of PTH and Vit D in calcium home. 3·5×4=14
7. Differentiate between the following:
- (a) Cushing syndrome and Cohn's disease
 - (b) PKA and PKG

(c) Synergistic and Permissive action.

(d) Osteomalacia and Osteoporosis.

3·5×4=14

8. Write short notes on the following:

(a) Cretinism

(b) POMC

(c) Releasing hormones

(d) Ghrelin.

3·5×4=14