2020

ZOOLOGY — HONOURS

Sixth Paper

(Unit - I)

Full Marks : 50

The figures in the margin indicate full marks.

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

Answer ***question no.* 1** and ***any two*** questions from the rest.

1. Answer ***any two*** questions : 10×2

(a) What are synomones? Give example.

(b) Mention two functions of prolactin.

(c) Distinguish between autocrine and paracrine secretion.

(d) Comment on Grave's disease.

(e) State the function of FSH in male and in female.

(f) What is Bruce Effect?

(g) Give the full form and one function of CCK-PZ.

(h) Name two key components that are responsible for bioluminiscence in insects.

2. (a) What do you understand by feedback control? Explain with a suitable example.

(b) Distinguish between the mechanism of action of protein hormone and steroid hormone.

(c) Name the hormone secreted from pineal gland and state its functions. 6+4½+(1½+3)

3. (a) Describe the mechanism of action of IP_3 and DAG as second messenger.

(b) How T_3 is structurally different from T_4? Mention functional significance of T_3. 7½+3+4½

4. (a) State the role of glucagon in glucose homeostasis.

(b) What is neurohormone? Give example.

(c) Comment on Exophthalmic Goitre.

(d) What do you mean by endocrine disruptors? 4½+(3+1½)+3+3

5. (a) Discuss the effect of any one environmental factor in sex determination of fish.

(b) State the role of vitamin D_3 in calcium metabolism.

(c) Name the effectors of cAMP and DAG. 6+6+3

Please Turn Over

6. (a) Write the steps involved in biosynthesis of insulin from preproinsulin.

(b) State the source, structure and function of secretin.

(c) Mention the source and function of Ecdysone. 7½+4½+3

7. (a) Distinguish between Estrous and Menstrual cycle.

(b) Discuss the role of iodide pump in T_3/T_4 biosynthesis.

(c) Comment on the environmental signalling in sex reversals in molluscs. 6+4½+4½

8. (a) Describe the vaginal changes along with diagram and hormonal profile during each phases of estrous cycle.

(b) Discuss the hormonal basis of insect diapause. (6+3)+6

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2020

ZOOLOGY — HONOURS

Sixth Paper

(Unit - II)

(Animal Biotechnology and Applied Zoology)

Full Marks : 50

The figures in the margin indicate full marks.

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

Answer ***question no.*** **1** and ***any two*** questions from the rest.

1. Answer ***any two*** of the following : 10×2

(a) Mention two uses of lac in industry.

(b) What is the significance of IPM?

(c) Name two biological contaminants in cell culture.

(d) What is royal jelly? Mention its significance.

(e) Name the chemical constituents of natural silk.

(f) What do you mean by therapeutic index?

(g) Mention the role of HCG in induced breeding of fish.

(h) What is DNA microinjection?

2. (a) Give a brief account of non-viral methods used during gene therapy.

(b) Elaborate the process of artificial insemination (AI) and embryo transfer (ET) technology. 6+4½+4½

3. (a) Describe the applications of transgenic technologies in conservation biology.

(b) What are the probable risks of using transgenic animals in poultry and dairy industry?

(c) Differentiate between finite and continuous cell lines. 6+6+3

4. (a) What do you mean by ‘natural’ and ‘artificial’ hybridizations?

(b) Write a short account on heredity of hybrids in the field of aquaculture, citing suitable examples.

(c) Enlighten ‘irradiation of spermatozoa’ in the light of gynogenesis in fish. (3+3)+4½+4½

Please Turn Over

5. What is Proteomics? Describe different methods of transcriptome analysis. Distinguish between microarray-based and non array-based methods of transcriptome analysis, giving merits and demerits of each of them. 3+4½+7½

6. Describe the basic requirements to design a deep litter for poultry birds. State the merits and demerits of deep litter system of poultry keeping. Describe the process of rearing of silkworm in an ideal rearing room. 4½+4½+6

7. What do you mean by monolayer vs suspension culture? Give one example of each. Name two human cell lines. What do you mean by the terms —

(a) dose and dosage

(b) LC_{50} and LD_{50}. 3+3+3+3+3

8. Write notes on : 4½+6+4½

(a) Process of eyestalk ablation

(b) Anti-sense technology as a tool of gene therapy

(c) Components of M – 1993.

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