2013

M.Sc. Part–II Examination

ZOOLOGY

PAPER—VIII (Group—B)

Full Marks : 50

Time : 2 Hours

The figures in the margin indicate full marks.

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

Illustrate the answers wherever necessary.

Write the Answers to Questions of each Unit in separate Booklet.

Answer any *four* questions taking *two* from each unit.

Unit—I

[Environmental Management]

1. Mention different steps in environmental management. Briefly discuss the role of environmental monitoring in the sustainable management of the environment. Add a note on biomerkers.

$4+5+3\frac{1}{2}$

2. Discuss on the principles and objectives of global conservation strategies. Enlist the root causes of biodiversity loss. $8+4\frac{1}{2}$

3. Define vermitechnology ? Mention its different components. State the criteria for selecting the suitable earthworm species to be used in this technology. Add a note on the advantages of vermicompost over other organic manures. $2+3+4+3\frac{1}{2}$

4. Write short notes (any *three*) : $4+4+4\frac{1}{2}$

   (a) E.I.A ;

   (b) Bioindicator species ;

   (c) Air pollution preventing tools ;

   (d) Wild-life Protection Act ;

   (e) Difference between Ecodegradation and Pollution.

Unit—II

[Developmental Biology]

5. (a) Name two proteins which prevent Wnt Signalling.

   (b) Mention the name of two genes which are expressed in he Nieuwkoop Center ?

   (c) Enlist different diffusible proteins of the organiser I and II.

   (d) Describe briefly the possible mechanism stating the role of gamma-class of phonolipase C and Src family of protein kinase in sea urchin egg activation. $1\frac{1}{2}+1\frac{1}{2}+1\frac{1}{2}+8$

6. (a) State the role of thrombin protein in newt regeneration.

   (b) How can you prove that dedifferentiation occurs in the early newt blastema ?

   (c) In xenopus, why premetamorphic tadpoles can regenerate their hind limb, but the latter stages of tadpoles and the adults can not ?

   (d) What are the gradients involved in head regeneration of hydra ? Mention the genes involved in this process. $3+3+4+(1\frac{1}{2}+1)$

7. (a) How Spemann demonstrated that enormous changes occur in cell potency during early and late gastrula by exchanging tissues of epidermis and neurons in a newt ?

   (b) With the help of a model proposed by Agius *ct al* (2000) explain the phenomenon of mesoderm induction and organizer formation through the interaction of β-catenin and TGF-β proteins.

$5+7\frac{1}{2}$

8. Write a short notes on the following —

   (a) Gene expression in the Nieuwkoop Center.

   (b) Biochemical changes of sperm in female ovarian duct in mammal.

   (c) Explanation for the prevention of extra head formation in hydra.

$4+4\frac{1}{2}+4$
