2017

M.Sc. Part-II Examination

ZOOLOGY

PAPER—VIII

Full Marks : 100

Time : 4 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.

Use separate Answer-scripts for each group.

Group-B

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

Unit—I

[Environmental Management]

1. Draw the ralationships among Ecoresteration, Ecorehabilition and Ecoremediation. Mention different steps in Environmental management. $6+6\frac{1}{2}$

2. What are the merits and demerits of Environmental Protection Act (1986)? Highlight the significance of Biomonitoring. Add a note on Biosensors. $4+4\frac{1}{2}+4$

3. What is Vermitechnology? Mention its different components. Briefly highlight the process of vermicompost extraction after vermicomposting. What are the criteria for the selection of suitable earthworm species to be used in vermicomposting. $2+2+4+4\frac{1}{2}$

4. Write short notes (any *three*):

(a) Social Impact Assessment ;

(b) Scientific principles for the development of Green Belt around industry ;

(c) SLOSS Concept ;

(d) Advantages of biofertilizer over chemical ones ;

(e) Ramsar sites of India. $4+4+4\frac{1}{2}$

Unit—II

[Developmental Biology]

5. (a) What happens if regenerating tail of a tadpole is treated with retinoic acid at the same time as hindlimbs are developing?

(b) In which area of *Xenopus* embrys noggin and chordin mRNA is expressed?

(c) Which is the major sperm-binding glycoprotein in mouse zona pellucida?

(d) Name the peptide which has sperm-attracting and sperm activating properties in sea urchin.

(e) Mention the axis specified by BMP gradient and wnt-gradient. $2\frac{1}{2}\times5$

6. (a) State the role of gamma class of phospholipase C in sea urchin egg activation.

(b) What are diffusible proteins secreted from pharyngeal endoderm which block wnt pathway in *Xenopus* development.

(c) How β-catenin is stabilized in the dorsal part of *Xenopus* egg. $5+1\frac{1}{2}+6$

7. (a) How the acrosome reaction is initiated in *stongylocentrotus purpuratus*?

(b) How siamois gene expression is activated for axis formation?

(c) Name epidermal inducer protein in amphibia. $5+6+1\frac{1}{2}$

8. (a) Explain with grafting experiment that formation of extra head is normally prevented in hydra through a gradient of inhibitory signal.

(b) What is the role of Retinoblastoma protein (Rb) in newt limb regeneration.

(c) Draw a labelled diagram of neural cascade of developing retina.