

2018

M.Sc.

Part-II Examination

ZOOLOGY

PAPER—VIII B

Full Marks : 50

Time : 2 Hours

The figures in the right-hand 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 unit.

Group—B

Answer any four questions taking two from each unit.

Unit—I

(Environmental Management)

1. Mention different steps in environmental management. Briefly discuss the impact of environmental monitoring in

(Turn Over)

the sustainable management of the environment. Add a note on EIA. $6+4\frac{1}{2}+2$

2. What is Biomonitoring? Discuss on the advantage and disadvantages of the monitoring different biotic indices. Briefly explain Biomarkers and Biosensor.

$2\frac{1}{2}+(3+3)+(2+2)$

3. Highlight the properties of municipal and industrial sewage. Explain the underlying scientific principles in tertiary sewage treatment plants. Add a note on merits of vermicompost on other organic wastes. $4+4+4\frac{1}{2}$

4. (a) Write short notes any *two* of the following : 2×4

(i) EIA,

(ii) Wild Life Protection Act,

(iii) Bioconversion of solid waste,

(iv) Objectives of global conservation strategies.

- (b) Write short notes on any *one* of the following :

(i) Bioinvasive species and its environmental impact,

(ii) Indicator species. $1 \times 4\frac{1}{2}$

Unit—II

(Developmental Biology)

5. (a) What happens to newt embryo if they are made to synthesize excess 'Frisbee' protein?

(b) If antisense morpholinos are used to eliminate Noggin, Chordin and Follistatin, what will be the fate of resulting amphibian embryo?

(c) State the function of nicotinic acid adenine dinucleotide phosphate.

(d) Name the factors stimulating new DNA and protein synthesis during late responses of the egg to sea urchin sperm. $2\frac{1}{2}+3+3\frac{1}{2}+3\frac{1}{2}$

6. (a) Describe briefly the set of physiological and molecular changes by which sperm become competent to fertilize the egg in mammal.

(b) How does induction of the mouse acrosome reaction take place by zona protein? $8+4\frac{1}{2}$

7. (a) What is Nieukoop Centre? How does ventral signal induce the mesoderm induction in *Xenopus*? $2\frac{1}{2}+4$
- (b) State briefly the role of bone morphogenesis proteins during organizer development. 3
- (c) Enumerate the function of Chordin and Noggin protein. $1\frac{1}{2}+1\frac{1}{2}$
8. (a) In *Xenopus* why premetamorphic tadpoles can regenerate their hindlimb but the latter stages can not?
- (b) How can you prove that proximalization of newt blastema occurs by respecification of retinoic acid?
- (c) Explain the head regeneration of *Hydra* in terms of two different gradients. $4\frac{1}{2}+4+4$