M.Sc.

2017

4th Semester Examination

ZOOLOGY

PAPER—ZOO-402

Full Marks : 40

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.

Answer *all* questions of the following.

Group–A

(*Developmental Biology*)

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

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

(b) Name one peptide which has both spermaltracting peptide and sperm-activating peptide in sea urchin.

(c) What happens if regenerating tail of a tadpole is treated with retinole acid at the same time as hind limbs are developing ?

(d) How epimorphosis differs from morphallaxis ?

2. Answer any *two* questions of the following : 2×4

(a) How the acrosome reaction is initiated in the sea-urchin *stongylocentrotus purpuratus* ?

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

(c) Zona pellucida contains three major glycoproteins-elucidate function of each.

(d) How does the muscle cell re-enter the cell cycle in newt limb regeneration and why it is needed ?

3. Answer any *one* question of the following : 1×8

(a) How retinoic acid can change proximo-distal positiional values in newt regenerating limb ?

(b) Briefly describe the molecular events taken place during capacitation in mammalian sperm with a hypothetical model.

(Group–B)

(*Ecotoxicology*)

4. Answer any *two* questions of the following : 2×2

(a) Define Xenobionts and cite examples.

(b) Effected of corrosive pollutants on human.

(c) Importance of Chelation therapy.

(d) Phase-I xenobiotic metabohisrn and enzymes involved.

5. Answer any *two* questions of the following : 2×4

(a) Classify effective environmental matters with their properties.

(b) State the possible route of entry and subsequent damages when xenobiots enters into our body.

(c) Biomagnification and food chain with suitable examples.

(d) Write notes on xenobionts and DNA damages.

6. Answer any *one* question of the following : 1×8

(a) Classify xenobionts with suitable examples considering Physical, Chemical and Physrological nature.

(c) Find out the LC_{50} value for the data given below with suitable illustration. Comment on your results.

How does it changes with dose and duration of Exposure ?

When,

- Number of test animals are—20;
- Toxicity bioassay for 24 and 48 hours;
- Pesticide used—Metacid 50.

Concentration of Metacid 50 (mg)	Mortality of test animals at 24 hrs.	Mortality of test animals at 48 hrs.
0·1	00	02
0·2	00	06
0·3	00	08
0·4	02	12
0·5	04	14
0·6	08	16
0·7	10	17
0·8	12	18
0·9	14	19
1·0	16	20