

M.Sc.

2014

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)

(Animal Physiology)

1. Answer any *two* questions of the following : 2×2
- (a) In which area noggin and chordin mRNA is expressed ?
 - (b) Mention the axis specified by BMP gradient and wnt gradient.

(Turn Over)

- (c) How cAMP production is activated in mammalian sperm capacitation ?
- (d) Name the neural substances involved in regeneration.

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

- (a) Enumerate the function of Resact as a sperm-activating peptide in sea urchin.
- (b) Describe briefly the role of inhibition and activation gradients in hydra to specify positional value.
- (c) How β -catenin is stabilized in the dorsal portion of the amphibian egg ?
- (d) What happens when a prospective epidermis was transplanted into an area in an early and late gastrula of other newt species and placed in a region where neural tissue normally formed ? Explain with reasons.

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

- (a) How do Wnts, BMPs and nodal related proteins are blocked by other paracrine factors secreted from pharynx, mesoderm and notochordal mesoderm ?
- (b) How can you correlate Sre protein kinase activity and function of phospholipase C γ (gama family) through G protein ?

(Group-B)
(Ecotoxicology)

4. Write notes on any *two* from the following : 2×2
- (a) Xenobionts and Xenobiotics.
 - (b) Corrosive pollutants.
 - (c) Xenobiotic metabolism.
 - (d) Chelating agent.
5. Answer any *two* questions of the following : 4×2
- (a) Classify with examples the environmental matters.
 - (b) Write in brief the route of entry and mechanism of $\text{NO}_x/\text{SO}_x/\text{CO}$.
 - (c) Explain with suitable illustration the biomagnification.
 - (d) Give idea on Xenobionts and environmental impacts on DNA.
6. Answer any *one* question of the following : 8×1
- (a) i) Classify Xenobionts considering Physical, Chemical and Physiological nature.
 - ii) State the route of entry and significant impact on human health due to -

Corrosive pollutants/ Neurotoxic pollutants/
Mutagenic pollutants.

- b) Find out the LC_{50} value from the data given below with suitable illustration. State the relationship with concentration of Xenobiotics and duration of exposure in relation to mortality.

Concentration of Xenobiotics	Mortality at 24hrs.	Mortality at 48hrs.
0.1 mg	0	0
0.2 mg	0	1
0.3 mg	1	2
0.4 mg	2	4
0.5 mg	4	5
0.6 mg	5	6
0.7 mg	7	8
0.8 mg	8	9
0.9 mg	9	10
1.0 mg	10	10
