

M.Sc. 4th Semester Examination, 2013

ZOOLOGY

PAPER – ZOO-402

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks

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

Write the answers to questions of each Group in separate books

GROUP – A

(Developmental Biology)

[Marks : 20]

1. Answer two of the following : 2 × 2

(a) State the function of phospholipase C (PLC).

(b) Name two diffusible proteins blocking wnt pathway.

(Turn Over)

- (c) Name the gene involved in axis formation in hydra which has a evolutionary role.
- (d) State the role of Retinoblastoma protein (RB protein) in newt regeneration.

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

- (a) How does Nieuwkoop center originate ?
- (b) Narrate briefly the function of bone morphogenesis protein 4(BMP4).
- (c) How do muscle cells re-enter the cell cycle during regeneration ?
- (d) Describe the role played by retinoic acid in newt limb regeneration.

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

- (a) Narrate the summary of events hypothesized to bring about the induction of the organiser in the dorsal mesoderm.
- (b) Describe briefly the Exocytotic reactions in sea-urchin with suitable diagram.

(3)

GROUP – B
(*Ecotoxicology*)
[*Marks : 20*]

4. Answer any *two* of the following : 2 × 2
- (a) Corrosive pollutants.
 - (b) Biomagnification of DDT in food chain.
 - (c) Enzymes involved in Phase-II reactions of xenobiotic metabolism.
 - (d) Importance of chelation therapy.
5. Answer *two* of the following : 4 × 2
- (a) Classify "Xenobionts" stating physical and chemical properties and physiological activity.
 - (b) Differentiate between acute and chronic toxicity. State the factors influences acute toxicity.
 - (c) Toxicity and DNA damage : Discuss in brief.
 - (d) Serological parameters changes with toxicity : Explain with citation.

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

(a) Name one metabolic and one neurotoxic pollutants. Mention route of entry, source and mechanism of action. 4 + 4

(b) Find out the LC_{50} value from the data given below with suitable illustration and comment on your result in relation to concentration of toxic chemicals and duration of exposure. 7 + 1

Concentration of Xenobiotics in $mg\ lit^{-1}$	24 hrs mortality	48 hrs mortality
1.0	0	1
2.0	1	3
3.0	3	5
4.0	4	7
5.0	5	9
6.0	7	11
7.0	9	12
8.0	10	13
9.0	11	15
10.0	12	17

Number of test animal-2 Fish species-Anabus testudineus [mm graph paper to be provided].