

M.Sc 3rd Semester Examination , 2009

ZOOLOGY

PAPER—Z - 303

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate marks

**Write the answers to questions of each Group
in separate books**

GROUP—A

(Developmental Biology)

1. Answer any *two* questions : 2 x 2

(a) How Bauchstück is formed during cleavage in newt ?

(b) Name two proteins which prevent Wnt signalling.

(Turn Over)

(c) In the Nieuwkoop Center which gene is expressed ?

(d) Mention the differences in regenerative ability between salamander and mammal.

2. Answer any *two* questions :

4x2

(a) How Spemann demonstrated that enormous changes occur in cell potency during early and late gastrula by exchanging tissues of epidermis and neurons in a newt ?

(b) In *Xenopus*, why pre-metamorphic tadpoles can regenerate their hindlimb, but later stages of tadpoles and adults cannot ?

(c) Why in *Hydra* the formation of extra head is prevented normally ? Justify your explanation with the help of an experiment.

(d) How can you prove that the intercalary growth occurs from proximal stump of a newt limb development (between shoulder and wrist) ?

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

- (a) Describe briefly the possible mechanism of sea urchin egg activation with the help of suitable diagrams.
- (b) With the help of the model proposed by Agins et al. (2000) explain the phenomenon of mesoderm induction and organizer formation through the interaction of β -catenin and TGF- β proteins.

GROUP—B

(*Environmental Resource and Pollution*)

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

- (a) Enlist four non-conventional energy resources.
- (b) What is RSPM?
- (c) Why photochemical smog is regarded as secondary pollutant?
- (d) Mention various sources of noise pollution.

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

(a) State the different hazards related to mineral resource extraction.

(b) Draw a relationship between greenhouse effect and global warming.

(c) Mention the environmental consequences due to discharge of effluents from thermal power plant into the aquatic environment.

(d) Explain the effect of noise pollution on human health.

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

(a) What is sewage? Mention the differences between industrial waste water and domestic waste water. Highlight the working principle of primary sewage treatment plant. 2 + 3 + 3

(b) Briefly discuss the pathways of Ozone formation in the stratosphere. Mention the names and sources of Ozone destroying chemicals. State the environmental consequences of Ozone Hole formation. 3 + 3 + 2