2008

ZOOLOGY

PAPER—VIII B

Full Marks : 50

Time : 2 hours

Answer any **four** questions taking **two** from each Unit

The figures in the right-hand margin indicate marks

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

Illustrate the answers wherever necessary

UNIT—I

(*Environmental Management*)

1. Enlist essential information needed to manage an environment receiving polluting substances. Discuss in brief various steps through which such information are collected and goals of management are achieved. $2\frac{1}{2} + 10$

2. Name the Articles in Indian Constitution related to environment protection. State important Acts pertaining to environmental protection and management enacted after independence of India. State constraints in the proper implementation of these Acts. What is "Green Bench"? $2+4+4+2\frac{1}{2}$

3. What is sustainable development? Mention objectives of natural resource conservation as has been identified in the "World Conservation Strategy". Discuss logical steps through which objectives of conservation may be achieved. Add a note on depletion curve. $2+3+5+2\frac{1}{2}$

4. Write short notes on any *three*: $4+4+4\frac{1}{2}$

   (*i*) Biofertilizers

   (*ii*) Biomarker concept

   (*iii*) Photochemical smog

   (*iv*) Environmental policies of India

   (*v*) Ecological recovery.

(*Continued*)

UNIT—II

(*Developmental Biology*)

5. (*a*) How can you explain that there is an antagonistic relationship between bone morphogenesis protein 4 and the organizer in Xenopus ?

(*b*) State the function of XANF 1 and Goosecoid.

(*c*) Write briefly the process of gradient formation of *Xenopus* nodal related proteins and their role in organizer formation with the help of a recent model. $3\frac{1}{2}+3+6$

6. (*a*) Briefly describe the possible mechanism of egg activation prior to sperm fusion and after sperm fusion with special emphasis on protein tyrosine kinase activity.

(*b*) State briefly the major functions of resect.

(*c*) State the role of calcium and bicarbonate ions in acrosome reaction. $6+3\frac{1}{2}+3$

7. (*a*) Mention the importance of positional value in amphibian limb regeneration.

(*b*) Explain the role of mesenchyme in limb generation of axolotl.

(*c*) Justify with suitable experiment that head region of *Hydra* sp play a dual role in regeneration process. $3 + 4 + 5\frac{1}{2}$

8. (*a*) How δ–crystaline protein initiate the early cornial morphogenesis ?

(*b*) Draw a labelled diagram of "Neural Cascade of developing retina."

(*c*) State the role of 'angiogenetic cell cluster' for the formation of the heart.

(*d*) The Nieuwkoop Centre is a "Dorsalizing Centre"— explain. $3 + 3 + 3 + 3\frac{1}{2}$