

2008

**ZOOLOGY**

PAPER—Z - 304

*Full Marks : 40*

*Time : 2 hours*

Answer **all** questions

*The figures in the right-hand margin indicate marks*

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

**GROUP—A**

*(Biochemistry)*

1. Answer any *two* questions : 2 × 2

(a) Draw a diagram to show the position of the different components of fatty acid synthase system.

(b) How one can ascertain that pentose phosphate pathway is operating in a tissue ?

*(Turn Over)*

(c) Define Ramachandran Plot.

(d) What is Mitchell's Chemiosmotic theory of oxidative phosphorylation.

2. Answer any *two* questions : 4 x 2

(a) What is Krebs bicycle? Add a note on the compartmentalization and clustering of urea cycle enzymes.

(b) Give a short account of special biochemical steps necessary to continue  $\beta$ -oxidation of unsaturated fatty acids.

(c) What are the two main types of enzymes inhibition? How can you differentiate the two types with kinetic analysis?

(d) Explain the effect of non-competitive inhibitor on enzyme kinetics. (2 + 2) + 4 + (1 + 3) + 4

3. Answer any *one* questions : 8 x 1

(a) (i) Name the end products of phosphorolytic and hydrolytic cleavage of glycogen. How are they formed?

(ii) Why liver glycogen can supply glucose to blood but muscle glycogen cannot?

- (b) Describe the four types of secondary bonds that are present in a protein chain. (6 + 2) + 8

GROUP—B

(*Ecotoxicology*)

1. Answer any *two* questions : 2×2
- (a) Environmental matters.
  - (b) Toxic reactions.
  - (c) Neurotoxins.
  - (d) Metallic pollutants.
2. Answer any *two* questions : 4×2
- (a) Co-toxicity :
    - (i) Mode of action
    - (ii) Factors governing co-toxicity.
  - (b) NO<sub>x</sub> gases—
    - (i) Pathways of N-gas production
    - (ii) Symptoms of NO toxicity.

(c) Properties and effectiveness of chelating agents.

(d) Define 'Biomagnification' and cite one examples of accumulation in aquatic food chain (any pesticide). (3 + 1) + (3 + 1) + (2 + 2) + (1 + 3)

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

(a) What is 'Genotoxicology'? Discuss the basic mechanism of DNA damage—  
Gene structure, DNA alteration.

(b) Define 'Immunotoxicology'. Discuss in brief the effects of metals and pesticides on fish by changes in immune response parameters.

(2 + 3 + 3) + (2 + 3 + 3)