

M.Sc 3rd Semester Examination , 2009

ZOOLOGY

PAPER—Z - 304

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

Illustrate the answers wherever necessary

Write the answers to questions of each Group in separate books

GROUP—A

(Biochemistry)

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

(a) Why the end-product of peroxisomal β -oxidation of fatty acid is octanoyl CoA. 2

(b) Mention the significance of pentose phosphate pathway. 2

(Turn Over)

(c) Write on the significance of K_m . 2

(d) Name the primary reactions of glycolytic pathway. What is feed-forward activation in this pathway? 1 + 1

2. Answer any two questions : 4 × 2

(a) Describe the regulation of Pyruvate dehydrogenase with a flowchart. 4

(b) What is transamination? Comment on SGOT and SGPT. 2 + 1 + 1

(c) Calculate the percent efficiency of energy conservation in ATP as succinate is oxidized to fumarate by molecular oxygen in intact mitochondria. ($P:O = 2$). Two half reactions and their E'_0 s are as follows : 4

(i) Succinate to Fumarate $E'_0 = +0.03$ volt

(ii) $1/2 O_2 + 2H^+ + 2e^- \rightarrow H_2O$
 $E'_0 = +0.82$ volt

(Given $F = 23063 \text{ cal mole}^{-1} \text{ volt}^{-1}$).

(d) Describe the different features of peptide bond with suitable diagram. 4

3. Answer any *one* question : 8 × 1

(a) (i) Write the steps of fatty acid biosynthesis by fatty acid synthase system.

(ii) What is Refsum's disease? 6 + 2

(b) Write short notes on : 2 × 4

(i) Hairpin bend

(ii) β -pleated sheet

(iii) Myoglobin vs. Haemoglobin

(iv) Double reciprocal plot.

GROUP—B

(*Ecotoxicology*)

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

(a) Give an outline classification of Toxicants.

(b) Make a schematic representation of the phases of Toxic actions.

(c) State factors affecting environmental concentration of chemicals.

(d) What is MATC?

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

(a) Explain factors influences toxicity (Exposure, Organism and Chemicals).

(b) In what ways indicator species are used in ecotoxicology.

(c) Differentiate between LC_{50} and LD_{50} .

(d) State the effects of Toxicants on the immune response parameters of fish.

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

(a) Discuss the potential value of environmental genotoxicology.

(b) What is biotransformation? Describe the mechanism of biotransformation with special reference to Phase II reaction.