2010

M.Sc.

3rd Semester Examination

ZOOLOGY

PAPER—Z-302

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

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

Illustrate the answers wherever necessary.

Group—A

(Biotechnology)

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

(a) What is C DNA? In eukaryotes how would C DNA differ from genomic DNA?

(b) What are the optimum Physicochemical Parameters for microbial degradation?

(c) What is the mechanism of work of a PRT?

(d) Mention the advantages of Cryopreservation with an example.

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

(a) What is a hybrid vector & how is it constructed? Explain how X-gal can be used in a method to identify hybrid vectors that contain segments of Chromosomal DNA?

(b) What is bioventing? Write notes on oil eating bug or Super bug. 1+3

(c) What are indicator organism? Write down the working principle of a biosensor. 1+3

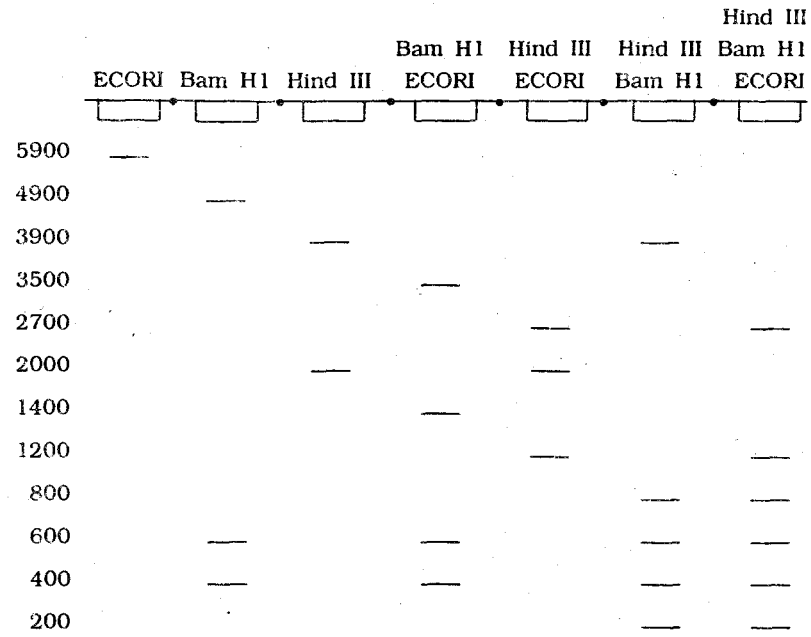
(d) (i) Mention the criteria for the selection of suitable species in Vermitechnology.

(ii) Mention the differences between Gynogenesis and Androgenesis. 2+2

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

(a) What is Phytoremediation? Briefly describe different types of Phytoremediation? techniques. Mention the advantages of bioremediation. 1+5+2

(b) A circular plasmid was digested with one or more restriction enzymes, run on a gel & following results were obtained.



Construct a restriction map for this plasmid.

Group—B

(Biochemistry)

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

   (a) State the structural significance of collagen fibre.

   (b) Note the similarities and dissimilarities between Glucokinase and Hexakinase.

   (c) Why TCA cycle called an Amphibolic pathway?

   (d) Explain why tyrosine is called both glucogenic and ketogenic amino acid.

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

(a) 'RAMACHANDRAN PLOT' with graphical representation. 2+2

(b) What is glycogen Primer? Write a note on covalent modification of glycogen synthase. 1+3

(c) Write down the steps of Urea formation (Schematic). 4

(d) Compare the structure of Linolenic acid and Linoleic acid with their chemical names. 2+2

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

(a) Describe the special biochemical steps necessary to continue β–oxidation of unsaturated fatty acid. Comment on the role of carnitive the β–oxidation of fatty acid. 6+2

(a) Write short notes on :

(i) β pleated sheet.

(ii) Anabolic role of TCA-cycle. 4+4