2012

M.Sc.

1st Semester Examination

BIOTECHNOLOGY

PAPER—BIT-101

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

Answer any *five* questions from the following : 5×2

1. (a) Compare between A, B and Z DNA.

(b) What is an assymetric carbon atom?

(c) What do you mean by Tm value of a DNA?

(d) What is the relationship between ΔG for a process and the speed at which it occurs?

(e) Give important difference between a reaction taking place within a cell and one taking place within a test-tube.

(f) Protein strongly absorbs UV light in the range 275-300 nm. Explain why?

(g) Which amino acid is unable to form a proper peptide bond and why?

(h) Mention the function of sphingomyelin.

Group—B

Answer any *two* questions from the following. 2×5

2. (a) Explain why during analysis of protein it is normally precipitated by TCA.

(b) What is Sanger's reagent? In which test it is used? 2+3

3. (a) Which base is unique to DNA and to RNA?

(b) Why RNA and not DNA is sensitive to alkaline hydrolysis? 2+3

4. (a) What are co-enzymes? Give example.

(b) Briefly describe the secondary structure of Protein. 3+2

5. Briefly mention the function of the following :

(i) Transaninases ;

(ii) Oxido-red intase. 2+3

Group—C

Answer any two questions from the following : 2×10

6. (a) State the difference between MALDIMS and ESI MS in their working principle during the measurement of a macromolcular protein ?

   (b) What is isoelectric focusing ?

   (c) Explain Lambert-Beer's law and its importance in spectroscopic methods of structure elucidation.

   3+3+4

7. (a) What is radioactivity ?

   (b) State and explain the theory of radioactive disintegration.

   (c) What do you mean by Tracer Technique ?

   (d) Write some useful applications of radioacive materials.

   $2+2\frac{1}{2}+2\frac{1}{2}+3$

8. (a) What is 'Ribozyme' ?

   (b) What is the function of active site of an enzyme ?

   (c) Deduce Michaclis–Menten' equation for an enzyme-catalysed reaction.

   (d) What do you mean by 'optimum temperature of an enzyme catalyazed reaction ?

   1+1+7+1

9. (a) What do you mean by the term 'PAGE' ?

(b) Describe briefly with a suitable diagram how proteins in a mixture can be separated using 'SDS–PAGE".

(c) What is affinity chromatography ?

1+7+2

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