

Exam. Code : 103202

Subject Code : 1316

B.A./B.Sc. 2nd Semester

BIOTECHNOLOGY

(Genetics & Biochemistry)

Time Allowed—3 Hours]

[Maximum Marks—75

SECTION—A

1. Attempt ALL questions :

- (i) Draw the structure of a nucleotide.
- (ii) What is an acrocentric chromosome ?
- (iii) What is a frameshift mutation ?
- (iv) What is autosomal dominant inheritance pattern ?
- (v) What are epimers ?
- (vi) Write the structure of AMP.
- (vii) What are the physiological roles of parathyroid hormones ?
- (viii) What are zymogens ?
- (ix) What is the significance of Km value ?
- (x) What are idiograms ? 1½×10

SECTION—B

Attempt **ONE** question from each unit.

UNIT—I

2. (a) Differentiate between :
- (i) Test cross and back cross
 - (ii) Dominance and epistasis
 - (iii) Somatic mutation and germinal mutation.
- (b) Describe the structure of polytene chromosome. 9+6
3. (a) Describe Mendel's law of heredity with suitable examples.
- (b) Mention the distinguishing features of euchromatin and heterochromatin. 9+6

UNIT—II

4. (a) Name any four chemical mutagens and their role in mutagenesis.
- (b) Compare and contrast the mechanisms of generalized and specialized transduction. 8+7
5. (a) What are hereditary syndromes ? Discuss the causes and consequences of Down Syndrome and Klinefelter Syndrome.
- (b) What are auxotrophs ? Giving a suitable example, describe replica plating method to isolate auxotrophs. 8+7

UNIT—III

6. (a) What are the methods to study primary structure of proteins ?
(b) Differentiate A-DNA, B-DNA and Z-DNA. 8+7
7. (a) Explain the secondary structure of proteins.
(b) Write notes on :
(i) Membrane lipids
(ii) Polysachharides. 7½+7½

UNIT—IV

8. (a) Describe the principle and applications of ELISA.
(b) Compare competitive and non-competitive enzyme inhibition. Give an example. 8+7
9. What are enzymes ? Discuss their classification and mention the type of reactions catalyzed by each class. 15