

Sr. No. 2707

Exam. Code: 103204  
Subject Code : 1360

B.A./B.Sc. 4th Sem.

(2517)

Paper - Biotechnology

(Biophysical &amp; Biochemical Techniques &amp; Molecular Biology)

Time allowed: 3 hrs.

Max. Marks: 75

Attempt 5 questions in total. Question No. 1 is compulsory. For the remaining four questions attempt one question from each unit. All questions carry equal marks.

Q.1. Write briefly on following:

1.5x10

- a. Lambert-Beer Law
- b. Isoelectric point
- c. Retention factor
- d. Z DNA
- e. Holliday Junction
- f. Plasmid
- g. Negative regulation of transcription
- h. tRNA
- i. Translocation
- j. Spacer arm

## UNIT-I

Q2. Discuss the basic principles and applications of the following techniques:

5x3

- i. SDS PAGE
- ii. Raman spectroscopy
- iii. Native gel electrophoresis

Q3. Discuss the following:

5x3

- i. The role of DNA marker, TEMED and ethidium bromide in electrophoresis
- ii. Principle of IR spectroscopy
- iii. How is pH gradient established in IEF? State the applications of IEF.

## UNIT-II

Q4. Discuss the following in detail

5x3

- a. TLC
- b. GC
- c. Ion exchange chromatography

(2)

Q.5. State the differences between the following:

5x3

- a. Preparative and analytical centrifugation
- b. Paper and column chromatography
- c. Ion exchange and affinity chromatography

## UNIT-III

Q6. Write short notes on following:

3x5

- i. Watson Crick model of DNA
- ii. Functions of DNA polymerase I
- iii. Insertion Elements
- iv. Okazaki fragments
- v. DNA gyrase

Q7. Discuss the molecular mechanisms of following in detail:

5x3

- i. Double strand break model of genetic recombination
- ii. Prokaryotic DNA replication
- iii. Replicative and conservative transposition

## UNIT-IV

Q 8. Write short notes on following:

3x5

- i. Structure of eukaryotic mRNA
- ii. What is attenuation? Explain its significance in gene regulation.
- iii. Features of genetic code
- iv. Initiation factors
- v. Mechanism of transcription termination

Q9. Discuss the following in detail:

5x3

- i. Prokaryotic transcription
- ii. Differentiate between prokaryotic and eukaryotic translation
- iii. Different types of RNA-their structure and function

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