

This question paper contains 4 printed pages]

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S. No. of Question Paper : **6459**

Unique Paper Code : **2494001203**

Name of the Paper : **Techniques in Biochemistry**

Name of the Course : **GE-Biochemistry (NEP)**

Semester : **II**

Duration : **2 Hours**

Maximum Marks : **60**

(Write your Roll No. on the top immediately on receipt of this question paper.)

There are six questions in this question paper.

Attempt *four* questions in all.

All questions carry equal marks.

Question No. **1** is compulsory.

1. (a) State whether the following statements are True *or* False. Justify your answer :

(i) Proteins are eluted from anion exchange column by increasing pH.

(ii) Glass cuvettes are not used to measure the absorbance of DNA solutions.

P.T.O.

- (iii) Native gel electrophoresis is not used to calculate the molecular weight of proteins.
- (iv) Paper chromatography gives better resolution than TLC.
- (b) Give *one* word for the following :
 - (i) An increase in absorbance when DNA is denatured.
 - (ii) A monochromator used in spectrophotometer.
 - (iii) A plot of probability of absorption versus wavelength. 12,3
- 2. (a) Explain the following :
 - (i) Electrophoretic mobility
 - (ii) Partition coefficient
 - (iii) Transmittance
 - (iv) Salting out
 - (v) Relative Centrifugal Force
 - (vi) Exclusion limit of a gel.
- (b) Calculate the Relative Centrifugal Force (RCF) generated if a rotor of average radius 5.0 cm is rotating at a speed of 40,000 rpm. 12,3
- 3. (a) Describe the principle of Molecular Sieve Chromatography.

- (b) Define molar extinction coefficient. The absorbance of 25 μM solution of ATP is 0.385 at 260 nm. If the pathlength is 1 cm, calculate the molar extinction coefficient of ATP. Why is the absorbance measured at 260 nm ?
- (c) Discuss the various ways in which bound ions are eluted from an ion exchange column. 6,5,4
4. (a) Define sedimentation velocity. What are the factors that affect the sedimentation velocity of a particle ?
- (b) Describe the working of a spectrophotometer with the help of a diagram.
- (c) What is the role of ethidium bromide, TEMED, stacking gel and bromophenol blue in electrophoresis ? 6,5,4
5. (a) Differentiate between the following :
- (i) Paper and thin layer chromatography
 - (ii) Density gradient and differential centrifugation
 - (iii) Swinging bucket and fixed angle rotors
 - (iv) Bathochromic and hypsochromic shift.

- (b) Define Beer-Lambert Law. What are the reasons Beer's law is not obeyed at high solute concentration ? 10,5

6. Write short notes on the following :

(a) Affinity chromatography

(b) Types of rotors

(c) Sonication as a method of cell lysis

(d) Dialysis. 5,4,3,3