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PG/II

M.Sc. 3rd Semester Examina

BIOCHEMISTRY

PAPER – BIC-301

Full Marks : 40

Time : 2 hours

Answer all questions

The figures in the right-hand margin i

*Candidates are required to give their a
own words as far as practic*

Illustrate the answers wherever n

GROUP – A

1. Answer any *five* questions from the fo
 - (a) Define molar absorption coeff
substance and mention its unit.

(2)

- (b) Will the coefficient of viscosity of a ds-DNA solution change at 98 °C ? Justify your answer.
- (c) What is relative centrifugal force ?
- (d) How do you determine the molecular weight of a molecule by electrophoresis ?
- (e) What is agglutination reaction ?
- (f) Why homoatomic molecules do not show IR-spectroscopy ?
- (g) Define 'chromophore' and 'auxochrome'.
- (h) What do you mean by partition coefficient ? In which chromatography the molecules are being separated on the basis of partition coefficient ?

GROUP – B

2. Answer any *two* questions from the following : 5 × 2
- (a) What is cryoelectron microscopy ? What is its advantage over electron microscopy ? 5

- (b) Write down the basic ultracentrifugation techniques and differences between Western blotting and ELISA.
- (c) What do you mean by skeletal structure and functional group frequency? What is resonance Raman spectroscopy?
- (d) What do you mean by chemical shift? How does chemical shift vary with the chemical environment? Explain ^1H -NMR spectroscopy?

GROUP – C

3. Answer any *two* questions from the following:
- (a) How can a mixture of proteins be separated by electro-focusing technique? Explain the difference between agarose gel electrophoresis and polyacrylamide gel electrophoresis techniques? State the importance of electrofocusing in proteomics.

(4)

(b) What is the basic principle of X-ray crystallography ? Briefly discuss its application to determine the structure of biomolecules. 6 + 4

(c) What is scatchard plot ? How is it determined ? What are incomplete antibodies ? How are they formed ? "The formation of an Ag-Ab lattice depends on the valency of both antigen and antibody."
— Explain. 2 + 2 + 1 + 2 + 3

(d) Classify the chromatographic technique of the following :

(i) On the basis of bed shape.

(ii) On the basis of physical state of mobile phase.

(iii) On the basis of separation mechanism.

Briefly discuss the working principle of column chromatography and mention some important application of it. 3 + 5 + 2