Exam. Code: 0002
Sub. Code: 0160

1058

B.A./B.Sc.(General)-2nd Semester

Bio-Chemistry

Paper-A: Biochemical Techniques

Time allowed: 3 Hours | Max. Marks: 45

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting one question from each Unit.*

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I. Attempt the following: -

(a) Write the basis of quantitation of nucleic acids in U.V. range. Write the wavelength.

(b) Write the principle of fluorescence spectroscopy. Write the name of a common fluorstudied by you.

(c) Write the names of matrices used for adsorption chromatography and ion-exchange chromatography.

(d) Differentiate between the terms "preparative" and "analytical" w.r.t. electrophoresis.

(e) State Beer-Lambert law.

(f) What is full form of SDS-PAGE? (6×1½)

UNIT – I

II. Give an elaborate account of "applications of spectroscopic techniques for determination of molecular structure of biomolecules". (9)

III. (a) Write a note on Infra-red spectroscopy.

(b) What is extinction-coefficient? Define and give an example to explain its application for determination of concentration of a biomolecule. (5+4)

UNIT – II

IV. (a) Write the principle of gel-permeation chromatography.

(b) What do you understand by the term "void volume" in chromatography?

(c) Write the principle of resolution of biomolecules in paper-chromatography. Explain brief procedure and visualization of analytes by giving an example. (3+2+4)

V. (a) Write a note on Gas-chromatography.

(b) What do you understand by the term "Reverse phase liquid chromatography"? Elaborate. (5+4)

P.T.O.

UNIT – III

VI. (a) Derive the equation to convert 'rpm' to 'rcf'.

(b) Write a note on analytical centrifugation. Write its applications with an example. (4+5)

VII. (a) Describe the various types of rotors used for centrifugation.

(b) Elaborate an "density gradient centrifugation" and its applications. (4+5)

UNIT – IV

VIII. (a) Write the principle of electrophoresis. Discuss the support media's used for proteins and nucleic acids.

(b) How can we determine the molecular weight of a protein by electrophoresis? Explain with diagram/graph. (4+5)

IX. (a) What is the role of SDS in electrophoresis?

(b) Differentiate between "Nature" and "denaturing" gels. Give example to explain.

(c) Describe the technique of Pulse-field gel electrophoresis and its applications. (2+4+3)

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