Total No. of Questions :5]

SEAT No. : ____

P1048

[Total No. of Pages :2

[5317] - 402

T.Y.B.Sc.

BIOTECHNOLOGY

Bb - 342 : Biochemical and Biophysical Techniques

(2013 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks :80***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw neat labelled diagrams wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) Answer all the following in 2-4 lines: **[20]**

a) What are strong electrolytes.

b) What are chromophores in proteins.

c) What is meant by dark field microscopy.

d) What is the basic principle of sedimentation.

e) What is hyperchromic shift.

f) What is fluorescence.

g) What are biological buffers.

h) What is the relation between wavelength & frequency.

i) What is retention time in chromatography.

j) State Lambert's law.

Q2) Attempt the following questions (any three). **[3 × 5 = 15]**

a) What is partition chromatography? Explain the principle of HPTLC and give its application.

b) What is NATIVE Gel electrophoresis? How does it differ from SDS PAGE.

c) Explain the principle of UV Visible Spectroscopy. Distinguish between a colorimeter and a spectrophotometer.

P.T.O.

d) What are buffers? Explain the significance of biological buffers in the living system.

Q3) Write short notes on any three: **[3 × 5 = 15]**

a) Agarose Gel Electrophoresis.

b) Anion Exchange chromatography.

c) Inverted Microscopy.

d) Thin Layer chromatography.

Q4) a) What is phase contrast microscopy. Explain the principle, working and applications of phase contrast microscopy. **[8]**

b) What is lab safety. Explain the various precautions taken in a laboratory during experimentation. **[7]**

OR

a) What is affinity chromatography? Give its principle and applications. **[8]**

b) What is preparative centrifugations. Give a detailed account of density gradient centifugation. **[7]**

Q5) Attempt any one. **[15]**

a) What is ultra centrifugation. Give an account of rotor types. Explain the care maintenance and safety procedures to be taken in a laboratory set up.

b) Discuss Spectroscopy with respect to-

i) Absorption and Transmission.

ii) Emission spectra.

iii) EMR radiation and its interaction with matter.

iv) Chromophores.

v) Detectors.

♦ ♦ ♦