Total No. of Questions :5]

SEAT No. : ____

P730

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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 is molarity?

b) What are fluorophores?

c) What are polyprotic acids?

d) What is the relation between g and RPM in centrifugation?

e) What is retention factor (RF) in chromatography?

f) What is molar extinction coefficient?

g) Define pH.

h) Define wavelength.

i) What is the dual nature of electro magnetic radiation?

j) What is the meaning of fixing of biological samples for microscopy?

P.T.O.

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

a) What is thin layer chromatography (TLC)? Give the principle and applications of this technique.

b) Define Beers and Lamberts law. Distinguish between absorbance and transmission of light.

c) Explain the different methods for specimen preparation for light microscopy.

d) How will you prepare-

i) Solution A of strength 0.5M volume 400 ml if the molecular weight of the solute is 125.

ii) Using the above solution prepare 0.3M solution with a final volume of 600 ml.

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

a) Capillary Electrophoresis.

b) Rotor types in centrifugation.

c) Phase contrast microscopy.

d) Electromagnetic Radiation.

Q4) a) Distinguish between SDS and native PAGE. What is activity staining? **[8]**

b) Explain the principle of Ion Exchange chromatography and describe the exchangers. **[7]**

OR

a) What is density gradient centrifugation? Explain the principle and give the applications of this technique. **[8]**

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

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

a) What is column chromatography? Give a detailed account of affinity chromatography. Add a note on its applications.

b) Discuss microscopy with respect to

i) Resolving power.

ii) Magnification.

iii) Illumination sources and Kohlers Illumination.

iv) Light field and dark field microscopy.

v) Stains and specimens.