

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Section.

x-x-x

1. Attempt the following:-

- a) _____ is used in electrophoresis to visualize DNA under UV light.
- b) _____ is used to stain protein gel.
- c) EEG is usually done when a patient complains that he has a chest pain (T/F).
- d) What are biochips?
- e) Name a sequence database.
- f) _____ is a field of study that uses computation to extract knowledge from biological data.
- g) _____ is a dehydration process typically used to preserve a perishable material or make the material more convenient for transport.
- h) 1 gram has _____ milligrams.
- i) Normality is defined as _____.
- j) The pH scale ranges from _____ to _____. (10x1)

SECTION - A

2. Write a short note on:

- a) Principle of spectrophotometer
- b) Precautions to be taken while using autoclave
- c) Lyophilization process
- d) Working pH meter

(4x2½)

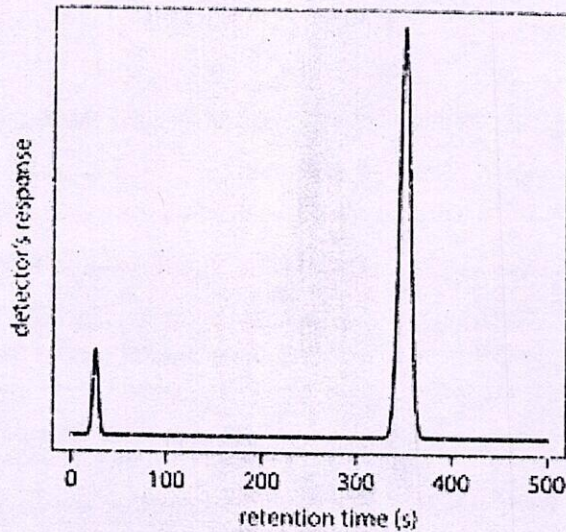
3. a) Describe various types of radionuclides and mention any five applications if radionuclides in field of biomedical sciences. (5)

b) In the paper chromatographic separation of a mixture of red and blue inks, the distance travelled by red ink is 13.2cm and the distance travelled by the solvent is 15cm. What is the R_f value of red ink? (2)

Contd.....P/2

(2)

- c) The chromatography of a mixture was performed and following chromatogram was observed. Explain the results in your own words. (3)



4. a) Explain different systems of Units. Why it is important to have consistent units world over?
 b) Describe the process of centrifugation in detail using a diagram and enlist different types of centrifugation. (2x5)

SECTION-B

5. a) What is a biosensor? Explain different components of biosensors using a diagram. Write a note on any one type of biosensor.
 b) Elaborate T1 and T2 relaxations in MRI with the help of a diagram. (2x5)
6. a) Explain Einthoven's triangle using a diagram. What types of waves you get in ECG.
 b) Write a short note on application of nanobiotechnology in medicine and healthcare. (2x5)
7. a) Write a detailed note on principle and functioning of ultrasound.
 b) Draw a labeled diagram of a bioreactor and mention all its parts. (2x5)

x-x-x