

Biyani Girls College

Model test paper A

B.Sc Biotech –I

Bioanalytical techniques and Instrumentation

Time allowed: 3hrs

Max

Marks=50

Q1 is compulsory. Attempt any 5 in all.

Q1. A) Choose the correct answer:

(1/2x20)

- The term chromatography was coined by:
 - a) Thomas Graham b) Michael Faraday c) Mikhail Tswett d) James & Martin
- The UV region of EM spectrum ranges from wavelength:
 - a) Above 700nm b) 400-700nm c) 200-400nm d) None of the above
- An instrument used for separating molecules on the basis of their charge is:
 - a) Centrifuge b) Spectrophotometer c) Flow cytometer d) Microtome
- A reliable source of Infrared radiation is:
 - a) Fluorescent lamp b) Tungsten lamp c) Nernst Glower d) Incandescent lamp
- Anion exchanger is made of which of these groups:
 - a) CM b) PVP c) DEAE d) Acrylamide

B) Fill in the blanks:

- Electron microscope was built for the first time in 1931 by _____.
- STEM stands for _____.
- FPLC stands for _____.
- RCF stands for _____.
- IEF stands for_____.

Section A

Q2. What is electron microscope? Explain its principle and types in detail.

10

Q3. Write short notes on: (any2)

(5+5=10)

- Concept of pH and buffer.
- Microtome
- Phase contrast Microscope

Section-B

Q4. Define spectroscopy. Explain the basic principle & working of UV-Visible Spectrophotometer.

10

Q5. Describe in short:

(3+4+3=10)

- Flow Cytometer
- Centrifuge
- Fluorescence Spectroscopy

Section-C

Q6. Write short notes on: (any2)

(5+5=10)

- HPLC
- Ion Exchange Chromatography
- Thin Layer Chromatography

Q7. Define chromatography. Write its principle and any 2 types in detail.

10

Section-D

Q8. Write short notes on: (any2)

(5+5=10)

- Pulse Field Gel Electrophoresis
- Radiotracer technique
- Capillary Electrophoresis

Q9. Describe the process of separation of proteins by electrophoresis.

10

Biyani Girls College

Model test paper B

B.Sc Biotech –I

Bioanalytical techniques and Instrumentation

Time allowed: 3hrs

Max

Marks=50

Q1 is compulsory. Attempt any 5 in all.

Q1. A) Fill in the blanks:

(1/2x20)

- _____ is the father of Microscopy.
- Commonly used DNA Inter-calating dye is _____.
- _____ lamp is used as UV- light source.
- _____ & _____ polymerise to form Polyacrylamide gel.
- I R spectroscopy is also known as _____.

B) Match the following:

a) In-Plane Bending

$M\omega^2r$

- b) RCF 400-700nm
- c) Visible range Rocking
- d) Out- plane Bending 200-400nm
- e) UV range Wagging

C) Name the instrument:

- involved in ultra thin sectioning of tissue.
- Used for studying vibrations of molecules.
- Used for measuring pH.
- Used for separating molecules on the basis of size.
- Used for creating a high resolution image of surface topography of sample.

D) Define

- a) SEM b) EPM c) Chromatography d) Autoradiography e) Spectroscopy

Section A

Q2. What is a microscope? Explain its principle and working of compound and phase contrast microscope. **10**

Q3. Write short notes on: (any2)

(5+5=10)

- Sectioning, staining and Mounting.
- TEM
- Cell fractionation Techniques.

Section-B

Q4. Give a detailed account of principle, types & applications of centrifugation.
10

Q5. Describe in short: (any2)

(5+5=10)

- IR spectroscopy
- Raman spectroscopy
- UV-Visible Spectrophotometer

Section-C

Q6. Write short notes on: (any2)
(5+5=10)

- Principle of Chromatography
- Gas liquid Chromatography
- Paper Chromatography

Q7. Define chromatography. Describe ion exchange chromatography in detail.

10

Section-D

Q8. Write short notes on: (any2)
(5+5=10)

- Agarose Gel Electrophoresis
- 2D PAGE
- IEF

Q9. What is radioactivity? Explain in detail the radiotracer technique and its applications.

10