

[14/A-10]

SEAT No. \_\_\_\_\_

No. of Printed Pages : 02

**SARDAR PATÉL UNIVERSITY**

**T. Y. B.Sc. Biochemistry (SEMESTER - V)**

**BIOCHEMISTRY: US05CBCH06**

**BIO-INSTRUMENTATION**

Date: 22/11/19 (Friday)

Time: 10:00 AM to 01:00 PM

TOTAL MARKS: 70

**Q.1 Multiple Choice questions : (1 Mark each)**

10

1. Which one of the following radiation has the longer wavelength?
  - a. infra red
  - b. x-ray
  - c. visible
  - d. ultra violet
2. Infrared spectroscopy does not have
  - a. Grating
  - b. Interference filter
  - c. Absorption filter
  - d. Prism
3. Which of the following lamp used as a source of ultraviolet radiation in UV spectroscopy?
  - a. Deuterium lamp
  - b. Tungsten lamp
  - c. Hydrogen Lamp
  - d. All of above
4. Centrifugal speed denoted by
  - a. G
  - b. RPM
  - c. RCM
  - d. RCF
5. Which of the following dye used for visualization of DNA during DNA gel electrophoresis?
  - a. Brilliant blue
  - b. Ethidium Bromide
  - c. Bromo cresol green
  - d. Methylene blue
6. Which of the following centrifugation is used to separate certain organelles from the whole cell?
  - a. Rate-zonal centrifugation
  - b. Differential centrifugation
  - c. Normal centrifugation
  - d. Isopycnic centrifugation
7. Agarose is composed of long unbranched chains of uncharged
  - a. Protein
  - b. Vitamin
  - c. Carbohydrate
  - d. RNA
8. In an SDS-PAGE
  - a. proteins are denatured by the SDS
  - b. proteins have the same charge-to-mass ratio
  - c. smaller proteins migrate more rapidly through the gel
  - d. all of the above
9. In Gas-liquid phase chromatography, the stationary phase is composed of \_\_\_\_\_ and the mobile phase is made of \_\_\_\_\_.
  - a. Solid, liquid
  - b. Liquid, gas
  - c. Liquid, liquid
  - d. solid, gas
10. Ion exchange chromatography is based on the
  - a. electrostatic attraction
  - b. electrical mobility of ionic species
  - c. adsorption chromatography
  - d. partition chromatography

(1)

(P.T.O.)

**Q.2 Answer in very short (Any Ten)**

20

1. How HPLC is differing from GLC?
2. Mention the types of elution in chromatography. What is affinity elution?
3. Write down the principle and application of fluorescence detector.
4. What is Isoelectric focusing?
5. Give the basic principle of electrophoresis.
6. How the protein is stained after electrophoresis?
7. Write down the various application of density gradient centrifugation.
8. Give a brief note on : Angular rotor
9. Name any four gradient materials and its uses in centrifugation.
10. Write down the function of PMT in spectrophotometer.
11. How beer's law is differing from lamberts' law?
12. Give a brief note on types of radiation source used in spectrophotometer.

- Q.3 a) Write down basic principle, components and application of U.V. [5]  
spectrophotometer.  
b) Give an illustrative note on types of monochromators used in [5]  
spectrophotometer.

**OR**

- Q.3 a) Mention various components present in colorimeter with diagram and write [5]  
down its function.  
b) Discuss the principle and working procedure of IR. [5]

- Q.4 a) Explain the construction and application of analytical centrifuge. [5]  
b) Discuss the steps involved in isolation of DNA by centrifugation techniques. [5]

**OR**

- Q.4 a) Give a brief note on: Rate zonal rotor [5]  
b) Write down the application of preparative centrifugation. [5]

- Q.5 a) What is 2-D electrophoresis? Explain 2-D electrophoresis with diagram. [5]  
b) Describe the principle and detailed procedure of SDS-PAGE. [5]

**OR**

- Q.5 a) Write down the role of agarose? How DNA could be separated according to [5]  
its size?  
b) Discuss the properties of different gel materials used to conduct gel [5]  
electrophoresis.

- Q.6 Give an account on : Detectors used in Gas chromatography [10]

**OR**

- Q.6 What are ion exchangers? Describe the working procedure of Ion Exchange [10]  
chromatography.

\*\*\*\*\*X\*\*\*\*\*

(2)