

B.Sc. Semester - 4 (CBCS) Examination
April/May -2022 [OLD COURSE]
BIO-CHEMISTRY (CORE)

Time: 2:30 Hours**Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

Q.1 A Write the correct answer for the questions [4 marks]

1. Give relationship between the grooves and wavelength in spectrophotometer.
2. The UV portion of the electromagnetic spectrum occurs between which wavelength?
3. Tungsten lamp is source of _____ light.
4. Define Absorbance.

Q.1 B Write the Answer in Brief. (Any 1 out of 2)..... [2 marks]

1. What do you mean by Absorbance Maxima?
2. Give importance of “molar extinction coefficient”.

Q.1 C Write the Answer in detail. (Any 1 out of 2)..... [3 marks]

1. Explain photomultiplier tube in detail.
2. State two advantages of double beam spectrophotometer over single beam spectrophotometer.

Q.1 D Write the Short note in detail. (Any 1 out of 2)..... [5 marks]

1. With diagram discuss components of single beam spectrophotometer in detail.
2. Write applications of spectrophotometer.

Q.2 A Write the correct answer for the questions [4 marks]

1. Name the technique used to separate serum from blood?
2. State name of isotonic medium used in differential centrifugation?
3. _____ type of rotor is used in analytical centrifuge.
4. What is “ r_{ave} ” in centrifuge?

Q.2 B Write the Answer in Brief. (Any 1 out of 2)..... [2 marks]

1. Why isotonic solution is used in differential centrifugation.
2. Write the use of table top centrifuge.

Q.2 C Write the Answer in detail. (Any 1 out of 2)..... [3 marks]

1. Write the application of high speed centrifuge.
2. Enlist factors affecting process of sedimentation.

Q.2 D Write the Short note in detail. (Any 1 out of 2)..... [5 marks]

1. Explain analytical ultracentrifuge.
2. Describe in detail about preparative ultracentrifugation.

Q.3 A Write the correct answer for the questions [4 marks]

1. Which among the following has lowest penetration power? Alpha rays, beta radiation and gamma rays.
2. Name the isotope you would use to dating the age of rock sample from the times of dinosaurs and why?
3. If you had 10 grams of radioisotope of ^{32}P . After how many half lives 1.25 grams of this radioisotope of phosphorous would remain in the sample?
4. Define Becquerel as unit of radioactivity.

Q.3 B Write the Answer in Brief. (Any 1 out of 2)..... [2 marks]

- 1 Define isobars with suitable example.
2. Briefly discuss carbon dating and its applications.

Q.3 C Write the Answer in detail. (Any 1 out of 2)..... [3 marks]

1. List the precautions to be taken while handling the radio-isotopes in the laboratory.
2. Write a brief note on Geiger Muller counter and its use.

Q.3 D Write the Short note in detail. (Any 1 out of 2)..... [5 marks]

- 1 Write applications of radioisotopes in the field of biological sciences.
2. Explain giving suitable examples; radioactive decays by alpha emission, beta emission and gamma emission. Write a comparative account of properties and penetration powers of alpha, beta and gamma emissions.

Q.4 A Write the correct answer for the questions [4 marks]

1. _____ gas used as a carrier gas in a gas liquid chromatography?
2. A soft drink contains sugar, salt, alcohol and vitamin C. A gas chromatogram could be used to determine which component?
3. Give full form of CMC ion exchanger.
4. State characteristic feature of chromatography?

Q.4 B Write the Answer in Brief. (Any 1 out of 2)..... [2 marks]

1. Why 2D TLC is better than one dimensional TLC.
2. Enlist various types of gels used in gel permeation chromatography.

Q.4 C Write the Answer in detail. (Any 1 out of 2)..... [3 marks]

1. Write the basic principle of gas liquid chromatography.
2. Define distribution coefficient (Kd) and retardation factor (Rf).

Q.4 D Write the Short note in detail. (Any 1 out of 2)..... [5 marks]

1. Write a short note on ion exchange chromatography.
2. Describe the principle and advantages of HPLC.

Q.5 A Write the correct answer for the questions [4 marks]

1. In a native PAGE, proteins are separated on the basis of molecular weight. True or False.
2. Give function of SDS (sodium dodecyl sulfate) in the electrophoresis of proteins.
3. _____ cross linking agent used for PAGE .
4. Plasmid DNA will migrate towards which electrode in agarose gel electrophoresis?

Q.5 B Write the Answer in Brief. (Any 1 out of 2)..... [2 marks]

1. Write the role of bis acrylamide in the SDS PAGE.
2. Write the factors affecting electrophoretic mobility of compound?

Q.5 C Write the Answer in detail. (Any 1 out of 2)..... [3 marks]

1. Write a note on the electrophoretic method based on separation by means of variation in the iso electric point of the protein.
2. Write a note on agarose as a gel material.

Q.5 D Write the answer in detail. (Any 1 out of 2)..... [5 marks]

1. Write a note on detection methods of electrophoresis.
2. Explain 2D gel eletrophoresis
