

B.Sc. Semester - 4 (CBCS) Examination
March/April-2023 [OLD COURSE]
BIO-CHEMISTRY(CORE)

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

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

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- Q.1(A) Answer the following questions. (Any One) (07)**
1. Explain principle and components of single beam spectrophotometer.
 2. Discuss about Electromagnetic radiation and spectra.
- Q.1(B) Answer the following question. (Any One) (04)**
1. Write on Beer- Lamberts law.
 2. Write on Applications of UV-Visible spectroscopy.
- Q.1(C) Answer the following question. (Any Three) (03)**
1. Write an advantage of a double beam spectrophotometer.
 2. What is an Extinction coefficient?
 3. True or false: A colorimeter can read absorbance at 280nm.
 4. State limitation of Beer-Lambert Law.
 5. True or false : Purity of nucleic acid can be checked using a uv viz spectrophotometer.
- Q.2(A) Answer the following questions. (Any One) (07)**
1. Explain differential centrifugation.
 2. Discuss basic principle of sedimentation.
- Q.2(B) Answer the following question. (Any One) (04)**
1. Applications of analytical centrifugation.
 2. Write in brief on various types of rotors used for centrifugation.
- Q.2(C) Answer the following question. (Any Three) (03)**
1. True or false : In certain cases it is possible to centrifuge a sample at low temperature.
 2. What is relative centrifugal force?
 3. True or false: All types of centrifuges can be used for sub cellular fractionation.
 4. What is density gradient centrifugation?
 5. True or false : Analytical ultracentrifugation is useful in determining purity of a macromolecule.
- Q.3(A) Answer the following questions. (Any One) (07)**
1. Write a note on various types of radioisotopes used in biochemistry.
 2. Discuss : Liquid scintillation counting
- Q.3(B) Answer the following question. (Any One) (04)**
1. Write on : Biological applications of radioisotopes.
 2. Write on safety measures in handling radioisotopes.

- Q.3(C) Answer the following question. (Any Three) (03)**
1. Gas ionization technique is used for.....
 2. State any biohazard of radiation.
 3. Name units for measuring radioactivity.
 4. True or false: Scintillation counting occurs with high precision.
 5. True or false : Radioisotope can be synthesized in laboratory.
- Q.4(A) Answer the following questions. (Any One) (07)**
1. Explain : Paper chromatography
 2. Discuss High performance liquid chromatography
- Q.4(B) Answer the following question. (Any One) (04)**
1. Discuss principle and materials used in ion exchange chromatography.
 2. Explain applications of Molecular sieve chromatography.
- Q.4(C) Answer the following question. (Any Three) (03)**
1. True or false: An ideal matrix for affinity chromatography must have good flow properties.
 2. Name the gases used in GC.
 3. True or false : In a chromatographic system, stationary phase may be solid, liquid or gel.
 4. What is partition coefficient?
 5. True or false: Qualitative and quantitative both analysis is possible by chromatography.
- Q.5(A) Answer the following questions. (Any One) (07)**
1. Explain SDS-PAGE
 2. Discuss : Isoelectric focusing
- Q.5(B) Answer the following question. (Any One) (04)**
1. Explain materials used and applications of agarose gel electrophoresis.
 2. Write on factors affecting electrophoretic mobility.
- Q.5(C) Answer the following question. (Any Three) (03)**
1. State importance of 2D gel electrophoresis.
 2. True or false: All types of electrophoresis retain native structure of protein.
 3. True or false : Buffers play important role during electrophoresis.
 4. True or false : Loading dye and tracking dye both always have same compositions.
 5. Among three DNA fragments (of different size)separated, which will move the shortest distance in gel?
