

B.Sc. Semester - 4 (CBCS) Examination
March/April-2024 [NEW COURSE]
BioChemistry-BC401(Core)

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

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

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- Que.1(A) Answer the following. (Any One out of Two) (07)
- (1) Discuss principle and components of double beam spectrophotometer.
 - (2) What is electromagnetic radiation? Explain various spectra involving EMR.
- Que.1(B) Attempt any one. (Out of Two) (04)
- (1) Write on Applications of UV-vis spectroscopy.
 - (2) Explain Beer Lambert's Law.
- Que.1(C) Attempt any three. (Out of five) (03)
- (1) State limitation of Beer Lambert's Law.
 - (2) True or false: Purity of DNA can be checked using a spectrophotometer.
 - (3) What is extinction coefficient?
 - (4) True or false: A sample can be analyzed at 280nm using a colorimeter.
 - (5) State advantages of a double beam spectrophotometer.
- Que.2(A) Answer the following. (Any One out of Two) (07)
- (1) Discuss principle of sedimentation in context to centrifugation.
 - (2) Explain density gradient centrifugation.
- Que.2(B) Attempt any one. (Out of Two) (04)
- (1) Write on practical applications of preparative centrifugation.
 - (2) Write on applications of analytical centrifugation.
- Que.2(C) Attempt any three. (Out of five) (03)
- (1) True or false: Only one kind of rotor works for all types of centrifuges
 - (2) What do you mean by RCF?
 - (3) What is differential centrifugation?
 - (4) True or false: Enzyme purification requires refrigerated centrifugation.
 - (5) What is the unit of rotor speed in centrifugation?
- Que.3(A) Answer the following. (Any One out of Two) (07)
- (1) Explain gas ionization technique.
 - (2) Give an account of various types of radioisotopes used in biochemistry.
- Que.3(B) Attempt any one. (Out of Two) (04)
- (1) Write a note on biological hazards of radiation
 - (2) What safety measures should be considered during handling radioisotopes?
- Que.3(C) Attempt any three. (Out of five) (03)
- (1) State two applications of radioisotopes.
 - (2) What is the use of liquid scintillation counting?
 - (3) True or false: It is not possible to synthesize radioisotopes in laboratory.
 - (4) Name the units that are used for measuring radioactivity.
 - (5) True or false: Scintillation counting occurs with high accuracy.
- Que.4(A) Answer the following. (Any One out of Two) (07)
- (1) Discuss: Thin layer chromatography
 - (2) Explain High performance liquid chromatography.

- Que.4(B) Attempt any one. (Out of Two) (04)
- (1) Write on principle and materials used in ion exchange chromatography.
 - (2) Discuss various applications of molecular sieve chromatography.
- Que.4(C) Attempt any three. (Out of five) (03)
- (1) Which gases are used in GC?
 - (2) True or false: Flow properties are important for an ideal matrix for affinity chromatography.
 - (3) What is partition coefficient?
 - (4) True or false: In a chromatographic system, stationary phase may be solid, liquid or gel.
 - (5) True or false: Hydrophobicity of aminoacids can be an important property in designing chromatographic separation of protein in certain cases.
- Que.5(A) Answer the following. (Any One out of Two) (07)
- (1) Explain Isoelectric focusing
 - (2) Discuss Agarose gel electrophoresis.
- Que.5(B) Attempt any one. (Out of Two) (04)
- (1) Explain materials used and applications of SDS PAGE.
 - (2) Write on factors affecting electrophoretic mobility of a molecule.
- Que.5(C) Attempt any three. (Out of five) (03)
- (1) What is the importance of 2D gel electrophoresis?
 - (2) True or false: Only DNAs can be separated by electrophoresis, not an RNAs.
 - (3) True or false: UV transilluminator is required for visualizing proteins after electrophoresis.
 - (4) True or false: Buffers play important role during electrophoresis.
 - (5) True or false: Loading dye and tracking dye both always have same compositions.
