

B.Sc. Semester - 4 (CBCS) Examination
April/May -2022 [NEW COURSE]
BioChemistry-BC401 (Core)

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

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

Q.1 (A): Answer any one of the following questions [7]

1. Write a short note on detectors used in colorimeter and spectrophotometer
2. Draw diagram of single and double beam spectrophotometer and discuss its advantages.

(B) Answer any one of the following questions..... [4]

1. Write a short note on applications of spectrophotometer.
2. Describe different wavelength selectors used in spectrophotometer.

(C) Answer any three of the following questions..... [3]

1. _____ is used as source of UV light.
2. Give the relationship between the grooves and wavelength in diffraction grating.
3. Range of visible light is 100 to 800 nm. True or False
4. Define molar extinction coefficient.
5. Give importance of blank in colorimeter and spectrophotometer.

Q.2 (A): Answer any one of the following questions [7]

1. Explain the principle, working and application of analytical ultracentrifuge.
2. Describe in detail: Principle of centrifugation.

(B) Answer any one of the following questions..... [4]

1. Explain differential centrifugation giving example
2. Discuss principle and application of density gradient centrifugation .

(C) Answer any three of the following questions..... [3]

1. VLDL will be on top in density gradient centrifugation. True or False.
2. Give relation between RCF and RPM.
3. What is centrifugation?
4. State importance of refrigeration in centrifugation.
5. Which type of rotor is used in table-top centrifuge ?

Q.3 (A): Answer any one of the following questions [7]

1. Write a short note on measurement of radiation using ionization chamber.
2. Give the application of radioisotopes in biological field.

(B) Answer any one of the following questions..... [4]

1. The half-life of Zn-71 is 2.4 minutes. If one had 100.0 g at the beginning, how many grams would be left after 7.2 minutes has elapsed?
2. Write a note on Gieger-Muller Counter.

(C) Answer any three of the following questions..... [3]

1. Which decay has highest penetration power.
2. X rays is type of gamma radiation. True or False.
3. Why only noble gas is used in ionization chamber?
4. Give importance of voltage stabilizer in ionization chamber.
5. Give names of chemicals used in scintillation cocktail.

Q.4 (A): Answer any one of the following questions [7]

1. Write a short note on high performance Liquid chromatography
2. Write a detailed description of principle and procedure of Thin Layer Chromatography

(B) Answer any one of the following questions..... [4]

1. Explain water regain capacity (Wr) of gels in chromatography.
2. Discuss in brief affinity chromatography.

(C) Answer any three of the following questions..... [3]

1. Name the stain used to color lipids in TLC.
2. If you require a sample of your target protein at high purity, which would be a good chromatographic method used?
3. In paper chromatography of amino acids. The distance travelled by solvent front from the origin was 10 cms while the distance travelled by arginine and lysine from the origin were 6cm and 4cm respectively. Calculate the R_f values for arginine and lysine.
4. Give one example each of anionic and cationic ion exchanger
5. Give full form of GLC.

Q.5 (A): Answer any one of the following questions [7]

1. Write a note on applications of electrophoresis.
2. Discuss different factors affecting separation of molecule in electrophoresis.

(B) Answer any one of the following questions..... [4]

1. Describe the use of Native PAGE and SDS PAGE in determination of subunits of quaternary structure of protein by taking one hypothetical example.
2. Write a note on 2D gel electrophoresis.

(C) Answer any three of the following questions..... [3]

1. State use of TEMED.
2. State importance of Riboflavin in PAGE.
3. Plasmid DNA will migrate towards which electrode in gel electrophoresis?
4. Which dye is commonly used for detection of DNA bands in gel electrophoresis?
5. Give full form of SDS-PAGE.
