

B.Sc. Semester - 6 (CBCS) Examination**March/April-2024 (OLD COURSE)****ANALYTICAL TECHNIQUES AND BIOINFORMATICS(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) Give specific answers. (04)
1. Define: Spectroscopy
 2. Full form of AAS.
 3. Which compound is used as reference compound in NMR?
 4. Wavelength of visible light is _____ to _____ nm.
- Que.1(B) Answer in Brief. (Any one out of two) (03)
1. Application of Dual-beam spectrophotometer.
 2. Application of Radioisotopes in field of life science.
- Que.1(C) Write a Note on. (Any one out of two) (07)
1. IR – Principle and applications.
 2. Discuss in detail: Mass Spectroscopy.
- Que.2(A) Give specific answers. (04)
1. Explain: Mobile phase.
 2. Write the any two names of detectors in chromatography.
 3. Name one advantage of LC-MS.
 4. UV detector is commonly used in GC Chromatography. (True/False)
- Que.2(B) Answer in Brief. (Any one out of two) (03)
1. Full name of NMR, IR and HPLC
 2. Application of Radioisotopes in field of bioscience.
- Que.2(C) Write a Note on. (Any one out of two) (07)
1. Explain GC-MS in detail.
 2. Discuss: Paper and thin layer Chromatography for separation on biomolecules.
- Que.3(A) Give specific answers. (04)
1. Define: Isoelectric point.
 2. Explain: Effective distribution coefficient
 3. What does SDS-PAGE stand for?
 4. Which Biomolecules can detect by using Ethidium Bromide dye in gel electrophoresis?
- Que.3(B) Answer in Brief. (Any one out of two) (03)
1. Short note on Flow Cytometry.
 2. Briefly explain the principle of paper electrophoresis.
- Que.3(C) Write a Note on. (Any one out of two) (07)
1. Discuss the principle and applications of pulsed-field gel electrophoresis (PFGE).
 2. Discuss the principle and applications of Agarose gel electrophoresis.
- Que.4(A) Give specific answers. (04)
1. Define: RNA
 2. Define: karyotype.
 3. Write full form of VNTR.
 4. What does the acronym FISH stand for in molecular biology?

- Que.4(B) Answer in Brief. (Any one out of two) (03)
1. Justify: Next generation sequencing will open new era of research.
 2. Explain autoradiography in short.
- Que.4(C) Write a Note on. (Any one out of two) (07)
1. Explain Principle and method of PCR Technology.
 2. Blotting techniques for RNA identification.
- Que.5(A) Give specific answers. (04)
1. Define: Bioinformatics.
 2. In which year Human Genome Project was started.
 3. Taq polymerase enzyme is isolated from _____ Bacterium.
 4. What is the purpose of a structure database in bioinformatics?
- Que.5(B) Answer in Brief. (Any one out of two) (03)
1. Define database. Give types and example of each.
 2. Explain the process of information retrieval from biological databases using the SRS tool.
- Que.5(C) Write a Note on. (Any one out of two) (07)
1. Write the details of Sequence Alignment tools.
 2. Explain: BLAST and FASTA.
