0305N208

Candidate's Seat No :_____

MSc Sem.-2 Examination

409

Biotechnology

May-2025

Time : 2-30 Hours] **[Max. Marks : 70**

Q.1 Answer the following

Give an overview of applications of nanotechnology in the field of imaging and medicine 14

or

(a) What are unique properties of carbon nanotubes and how are they used 7

(b) What are drawbacks of using nanoparticles 7

Q.2 Answer the following

What is the basic principle of NMR spectroscopy? Explain in detail with NMR instrumentation, components, and applications.
14

or

(a) Explain the principle and instrumentation of FT-IR.. 7

(b). Explain the working process and safety measures of AAS. 7

Q.3 Answer the following

Describe various types of databases and discuss the sequence-based databases at length. 14

or

(a) What is phylogenetic tree? Explain various methods of plotting phylogenetic tree? 7

(b) Discuss the applications of bioinformatics in Genomics and transcriptomics? 7

Q.4 Answer the following

What are dot plots? Explain their importance in sequence comparison? 14

or

(P.T.O)

N208-2

(a) What is BLAST discuss at length? Discuss the inner workings of blast 7

(b)Write a note on use of bioinformatics in the rational drug discovery. 7

Q.5 Answer the following(Any Seven) 14

(a) What is Scanning Tunneling Microscopy.

(b) What is role of dendrimers in drug delivery

(c) What are Biocatalytic nanocomposites

(d) Give the types of AAS with advantages and disadvantages

(e) What is mass spectrometry .

(f) What is query coverage in result output of blast.

(g) Why Is Data Explosion a Challenge?

(h)What is the use of an SSD?

(i) Enlist Protein Databases

(j) What are common drug targets?

(k) Name the analysis used to identify the distribution and excretion patterns of drugs using computer?

(l) Name two scientists who pioneered nanotechnology and their contribution