

PGD BIN Sem.-1 Examination

PGD BIN-401

Bioinformatics Fundamentals & Biological Databases

Time : 2-30 Hours]

February-2025

[Max. Marks : 70

Question 1: A. Describe different types of secondary storage devices. (7 marks)

B. Write a brief note on networks and explain the importance and differences between the different network types. (7 marks)

OR

A. Describe the file explorer in Windows and its function and how its used. (7 marks)

B. Describe RAM and ROM and its functions. Describe briefly their types. (7 marks)

Question 2: A. Explain the FASTA algorithm in detail. (7 marks)

B. Explain the PSI- Algorithm (7 marks)

OR

A. Write a note on sequence alignment and explain its applications (7 marks)

B. Define secondary databases in bioinformatics. Explain their purpose and provide examples. (7 marks)

Question 3: Answer the following

A. What is the role of EMBL (European Molecular Biology Laboratory) as a primary database? Describe its key components and features. (7 marks)

B. Define ESTs, STS, and GSS. Discuss their significance in genome mapping and annotation (7 marks)

OR

A. Explain the structure and purpose of Pfam as a secondary database. How is it used in bioinformatics? (7 marks)

B. Discuss the structure and features of DrugBank database. (7 marks)

Question 4: A. What is Poisson probability distribution? Solve the following example

in a hospital, the average number of patients arriving at the emergency room in one hour is 12. What is the probability that more than 3 patients will arrive in the next hour? (7 marks)

B. Explain the Z and T-test distribution. (7 marks)

OR

A. Explain standard deviation and Variance in detail. (7 marks)

B. Write an application and limitations of Biostatistics. (7 marks)

Question 5: Answer the following (Any seven) (14 marks)

1. Explain tBLASTn.

2. What are the major challenges in bioinformatics?

3. Give one example of a primary nucleotide database.

4. Expand the acronym KEGG.

5. Which database stores Expressed Sequence Tags (ESTs)?

6. What is the primary purpose of STS (Sequence Tagged Site) in genomics?

7. Expand the acronym CATH.

8. Explain Goodness of fit

9. Write any two Applications of the chi-square distribution

10. Give the shortcut to run a presentation in powerpoint

11. The software used to to simplify data calculactuions and draw charts

12. Briefly define the Ring Topology.