R8369	Sub. Code 502401

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Fourth Semester

Bioinformatics

MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE

(CBCS – 2019 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. What is Artificial Intelligence?
2. List some disadvantages of Artificial Intelligence.
3. What is Heuristic Knowledge?
4. Define the term Predicate
5. What is Machine Learning?
6. Specify the importance of Deep Learning
7. What is Classifier in Machine Learning?
8. Mention the purpose of Decision Tree Algorithm
9. Define Hebbian Learning Rule
10. What is Induction?

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) Discuss in detail about Breath First Search and its performance measures.

Or

(b) Discuss about

(i) Direct Heuristic Technique

(ii) Weak Heuristic Technique.

12. (a) Explain briefly about

(i) Declarative Knowledge

(ii) Procedural Knowledge.

Or

(b) Write the advantages and disadvantages of Logical Representation.

13. (a) What is difference between supervised and unsupervised learning?

Or

(b) Write the different types of Supervised Learning?

14. (a) Write some of the challenges in Machine Learning?

Or

(b) Explain briefly about K-Means and K-Modes Clustering Algorithm

15. (a) Briefly explain the Sequential Covering Algorithm with example.

Or

(b) Write a short note on Reinforcement Learning?

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Discuss in detail about the Applications of Artificial Intelligence.

17. Explain briefly about

    (a) Frame Representation

    (b) Production Rules.

18. Discuss about

    (a) Semi-Supervised Learning

    (b) Self-Supervised Learning.

19. Explain briefly about the Support Vector method with suitable example.

20. Discuss about

    (a) Learn-One-Rule

    (b) Covering Rules

    (c) Subtleties

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R8370

Sub. Code
502402

M.Sc. DEGREE EXAMINATION, APRIL – 2023

Fourth Semester

Bioinformatics

SYSTEMS BIOLOGY

(CBCS – 2019 onwards)

Time : 3 Hours Maximum : 75 Marks

Part A (10 × 2 = 20)

Answer **all** questions.

1. Write any two advantages in proteomics.

2. How are molecules separated in MALDI-TOF MS?

3. What are the functions of Gene Ontology?

4. List out the features of Pfam?

5. Outline the importance of protein interaction.

6. What is DOVE?

7. Define Lipidomics.

8. What are the major roles of biomics?

9. Define force field.

10. Name two applications of metabolomics.

Part B (5 × 5 = 25)

Answer **all** questions, choosing either (a) or (b).

11. (a) How do you validate human body fluid proteome using quantitative profiling?

Or

(b) Write briefly about the tandem mass spectrometry for protein identification.

12. (a) Give an account of static protein–protein interaction networks.

Or

(b) Explain the salient features of ExPASy Proteomics server.

13. (a) Comment on the structural features of glycome.

Or

(b) What are metaglycomes? Explain with suitable examples.

14. (a) Describe briefly GROMOS as software for modeling.

Or

(b) Give explanatory notes on signal transduction networks.

15. (a) Explain with suitable diagram the nodes and edges of interaction networks.

Or

(b) Write down the applications of transcriptomics.

Part C

$(3 \times 10 = 30)$

Answer any **three** questions.

16. Describe the computational methods protein–ligand binding site prediction.

17. Explain in detail about the PPI modeling in biological systems.

18. Elaborate the role of omics in systems biology.

19. Explain the principle, mechanism and applications of MALDI-TOF.

20. How neural network model works in systems biology?

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