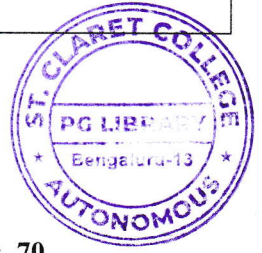


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St. Claret College
Autonomous, Bengaluru

ROLL NO:

DATE:

MCA END SEMESTER EXAMINATION-SEPTEMBER 2026
MCA: SECOND SEMESTER
MCA 2325: ARTIFICIAL INTELLIGENCE



TIME: 3 hours.

MAX. MARKS: 70

This paper contains Two printed pages and Four parts

Instructions:

1. Verify and ensure that the question paper is completely printed.
2. Any discrepancies or questions about the exam paper must be reported to the COE within 1 hour after the examination.
3. Students must check the course title and course code before answering the questions.

PART-A

Answer any EIGHT questions out of TEN. Each answer carries TWO marks.

[2X8 = 16]

1. Discuss the concept of a Production System with a suitable example.
2. State the role of Heuristic Functions in Artificial Intelligence.
3. Explain the concept of Alpha-Beta Pruning in game playing.
4. Distinguish between Procedural Knowledge and Declarative Knowledge.
5. Explain the significance of K-STRIPS in AI planning over STRIPS.
6. Discuss the significance of Information Gain in Decision Tree Learning.
7. Discuss the concept of Certainty Factor in uncertain reasoning.
8. Explain the concept of Context-Free Grammar (CFG) in Natural Language Processing.
9. Describe the concept of an Expert System and its purpose.
10. Compare Convolutional Neural Networks (CNN) and Recurrent Neural Networks (RNN).

PART-B

Answer any FOUR questions out of SIX. Each answer carries FIVE marks.

[5X4=20]

11. Explain Hill-Climbing Search Algorithm with a suitable example.
12. Discuss Forward Reasoning and Backward Reasoning with suitable examples.
13. Describe the STRIPS planning system and explain its components with a suitable example.
14. Explain Decision Tree Learning. Illustrate the concepts of Entropy and Information Gain.
15. Explain Fuzzy Logic and Membership Functions with suitable examples.
16. Discuss the architecture of an Expert System with a neat diagram.

PART-C

Answer any TWO questions out of FOUR. Each answer carries TEN marks.

[10X2=20]

17. Explain Best-First Search Algorithm with a suitable example. Compare it with Hill-Climbing Search in terms of working, advantages, and limitations.
18. Explain the Knowledge Representation techniques used in Artificial Intelligence. Discuss Predicate Logic, Semantic Networks, Frames, and Conceptual Dependency with suitable examples.
19. Explain Grammar in NLP. Discuss Context-Free Grammar, Constituency Grammar, and Dependency Grammar with suitable examples and its applications.
20. Discuss Artificial Neural Networks, Convolutional Neural Networks, and Recurrent Neural Networks with example.

PART-D

Answer the following question. Answer carries FORTEEN marks.

[14X1=14]

21. A company has collected customer purchasing data and wants to develop an AI Dashboard using the Seaborn library to analyze customer buying behaviour and support business decision-making.

Answer the following:

- a. Explain the importance of data visualization in Artificial Intelligence and Data Analysis.(2 Marks)
- b. Describe the steps involved in loading the cleaned dataset and preparing it for visualization using the Seaborn library.(3 Marks)
- c. Explain how Bar Chart, Histogram, and Heatmap can be used to analyze customer purchasing behaviour. Support your answer with suitable examples.(6 Marks)
- d. Explain the significance of interpreting visualizations and discuss how they help in making better business decisions. (3 Marks)
