

RAN-2111040102010002
MCA (Sem.-II) Examination April - 2026
Artificial Intelligence (Paper : 201)
Time: 3 Hours]
[Total Marks: 70
સૂચના : / Instructions

- (1) ઉપરોક્ત દર્શાવેલ વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the above details on your answer book

Seat No.:

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Student's Signature

Q.1. A. Explain the inference rules used in Propositional Logic. 07
OR

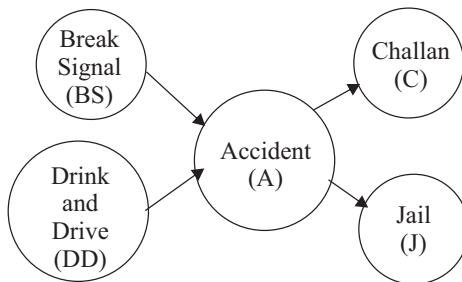
- A. Describe the key components of the knowledge base in AI. 07
B. Explain heuristics using the Tic-Tac-Toe problem. 04
C. What is the significance of the Turing problem in AI? 03

Q.2. A. What is First Order Predicate Logic (FOPL)? Explain its syntax, semantics, and advantages over Propositional Logic (PL). 07
OR

- A. i. Express the statement “*There is someone who is not respected by everyone*” in first-order predicate logic.
ii. List the characteristics of an Expert System.
B. Discuss various approaches of Knowledge Representation. 07

OR

- B. Write a note on Frames and Scripts and explain, using examples. 07

Q.3. A. Consider the Directed Acyclic Graph. Using the probabilities for the events given in the tables below, determine the probability for Challan given that the accident has happened due to the Break Signal and Drink and Drive. 07

Probabilities for Events

P(BS)	P(DD)
0.7	0.65

A	P(C)
0	0.1
1	0.9

BS	DD	P(A)
0	0	0
0	1	0.7
1	0	0.6
1	1	0.95

A	P(J)
0	0.1
1	0.7

B. Explain Constraint Satisfaction Problem, as a search technique, using an example. **07**

Q.4. Attempt the following :

A. Discuss the Minimax search technique, with an example. **08**

B. Differentiate between (Any TWO) : **06**

i. BFS and DFS

ii. Conditional and Joint Probability

iii. A* and Hill Climbing

Q.5. Attempt briefly (Any TWO) from the following : **14**

1. Explain the Hidden Markov Model, using an illustration.

2. Discuss and explain the components of an NLP application.

3. Discuss the various applications of Computer Vision in AI.
