

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - V Computer Science & Engineering : WINTER : 2024
SUBJECT: ITC-III: ARTIFICIAL INTELLIGENCE

Day : Thursday
 Date : 12/12/2024

W-25592-2024

Time : 02:30 PM-05:30 PM
 Max. Marks : 60

N.B :

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Assume suitable data if necessary.

Q.1 List types of agents. Also explain in detail goal-based agents, utility-based agents, learning agents. [10]

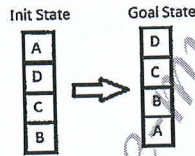
OR

Q.1 Define Agents and Environments in AI? Explain different Environments in AI. [10]

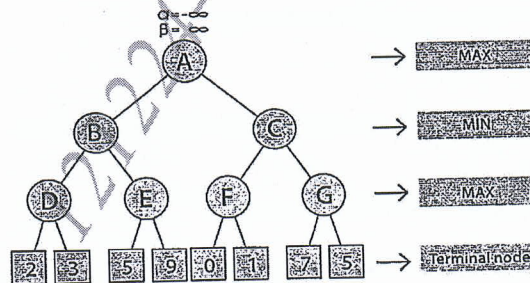
Q.2 What is state space search? How it is used in water Jug problem. [10]

OR

Q.2 Discuss the concept of Hill climbing search Algorithm. Solve below example Using Hill Climbing Algorithm. [10]



Q.3 Discuss the concept of Alpha-Beta pruning with below example: [10]



OR

Q.3 Explain Mini-Max Algorithm with example in Artificial Intelligence. [10]

Q.4 List different approaches to knowledge representation. Explain any one Knowledge representation approach in detail? [10]

OR

P.T.O.

Q.4 Represent the following sentences in first-order logic, using a consistent vocabulary (which you must define): [10]

- i) Not all students take both History and Biology.
- ii) Only one student failed History.
- iii) Only one student failed both History and Biology.
- iv) The best score in History was better than the best score in Biology.
- v) Every person who dislikes all vegetarians is smart.
- vi) No person likes a smart vegetarian.

Q.5 Define uncertain knowledge, prior probability and conditional probability. State the Baye's theorem. How it is useful for decision making under uncertainty about knowledge? [10]

OR

Q.5 Consider the following sentences: [10]

- i) John likes all kind of food
 - ii) Apples are food
 - iii) Chickens is food
 - iv) Anything anyone eats and is not killed by is a food
 - v) Bill eats peanuts and is still alive
 - vi) Sue eats everything Bill eats
- Conversion of facts into first-order logic.
 - Convert FOL statements into CNF
 - Negate the statement which needs to prove (proof by contradiction)
 - Draw resolution graph (unification).

Q.6 Explain Architecture of Expert system? Give its 3 application areas. [10]

OR

Q.6 Explain structure of Rule- Based expert system. [10]

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