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Total No. of Pages : 02

Total No. of Questions : 09

B.Tech. (CSE) (Sem.–6)
ARTIFICIAL INTELLIGENCE

Subject Code : BTCS602-18

M.Code : 79250

Date of Examination : 06-06-2025

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION - A

1. Write briefly :

a. Express Modus Ponens's rule in propositional logic.

b. Find the output of the following :

father(jack, susan).	/* Fact 1 */
father(jack, ray).	/* Fact 2 */
father(david, liza).	/* Fact 3 */
father(david, john).	/* Fact 4 */
father(john, peter).	/* Fact 5 */
father(john, mary).	/* Fact 6 */
mother(karen, susan).	/* Fact 7 */
mother(karen, ray).	/* Fact 8 */
mother(amy, liza).	/* Fact 9 */
mother(amy, john).	/* Fact 10 */
mother(susan, peter).	/* Fact 11 */
mother(susan, mary).	/* Fact 12 */

parent(X, Y) :- father(X, Y). /* Rule 1 */

parent(X, Y) :- mother(X, Y). /* Rule 2 */

c. Major reasons for the growth of rational agents.

d. What is the Horn Sentence?

- e. What are the five causes of uncertainty?
- f. Need of heuristic functions.
- g. *"A rule is sound if its conclusion is true whenever the premise is true"*. Write inference rule for this statement.
- h. Express in universal quantification formula *"There is a fox that is faster than all snails"*.
- i. What is state space search?
- j. Illustrate with the help of suitable example, FOPL.

SECTION - B

- 2. Explain with the help of suitable example Markov decision process.
- 3. Write an algorithm for calculating minimax decisions. What is the role of alliances in the multiplayer games?
- 4. What is the concept of fuzzy sets and fuzzy logic? Explain with the help of suitable example.
- 5. Differentiate between perfect decision game and imperfect decision game.
- 6. Write the alpha-beta search algorithm. Explain the role of it with the help of suitable example.

SECTION - C

- 7. What is A* algorithm and How it is different from other search strategies? Explain with the help of suitable example.
- 8. Write the various components of natural language processing. Describe syntactic analysis and semantic analysis in brief.
- 9. Compare and contrast Expert Systems and Knowledge Acquisition. Illustrate with the help of suitable example.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.