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Paper Code : PEC-CSBS- 501 B/PEC-IT501B Artificial Intelligence
UPID : 005510

Time Allotted : 3 Hours   *Full Marks :70*

The Figures in the margin indicate full marks.
Candidate are required to give their answers in their own words as far as practicable

Group-A (Very Short Answer Type Question)

1. Answer *any ten* of the following :   [1 x 10 = 10]
   - (I) What is Artificial Intelligence?
   - (II) Which search is implemented with an empty first-in-first-out queue?
   - (III) what are the approaches of knowledge representation?
   - (IV) What is used to compute the truth of any sentence?
   - (V) Factors which affect the performance of learner system does not include_____.
   - (VI) Name two Tools used to develop expert system
   - (VII) The process of removing detail from a given state representation is called _____
   - (VIII) When is breadth-first search optimal?
   - (IX) How are knowledges correctly represented in AI ?
   - (X) Which form is called as a conjunction of disjunction of literals?
   - (XI) Which one is used for utility functions in game playing algorithm?
   - (XII) What is the heuristic function of greedy best-first search?

Group-B (Short Answer Type Question)
Answer *any three* of the following :   [5 x 3 = 15]

2. Give some real-world applications of AI.   [5]
3. What is depth limited search? What are its advantage and disadvantage?   [5]
4. How should knowledge be represented in an AI technique?   [5]
5. Convert the sentences into equivalent predicated: [5]
    a. Everyone loves everyone.
    b. Every student smiles.
6. How can AI be used in fraud detection?   [5]

Group-C (Long Answer Type Question)
Answer *any three* of the following :   [15 x 3 = 45]

7. (a) Consider the following Knowledge Base and solve the validity of the Goal using resolution   [5]
        techniques
        Given
        The humidity is high or the sky is cloudy.
        If the sky is cloudy, then it will rain.
        If the humidity is high, then it is hot.
        It is not hot.
        Goal: It will rain.

    (b) Draw a decision tree corresponding to the following expression: [5]
        If (Weather = Hot ^ Humidity = High) v
        (Weather = Cool ^ Humidity = Moderate) V
        (Weather = Rainy ^ Wind = Strong).
        Then start reading a story book.

    (c) Write short note on Semantic analysis with reference to NLP.   [5]

8. (a) Write Short notes on Bayesian network: [5]

    (b) What is Dempster Shafer Theory ?   [5]

    (c) Write Short notes on Fuzzy Logic and Fuzzy sets.   [5]

9. (a) Define Genetic algorithm. Explain the algorithm in details   [7]

(b) Discuss the different Crossover techniques in Genetic Algorithm [8]

10. (a) Discuss on agents as search procedure [8]

(b) Describe Goal based Agents with a diagram [7]

11. (a) Convert the following into clausal forms: [9]
$\forall$x{P(x)->(($\forall$y)(P(y) -> p(f(x,y))) $\wedge$ ~{($\forall$y)[Q(x,y)->P(y)]))}

(b) Write the differences between Associative network and conceptual graph. [3]

(c) Write the difference between Framers and Script [3]

*** END OF PAPER ***