Hall Ticket Number:

Code No.: 9123 M

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

M.Tech. I Year (CSE) I-Semester (Make Up) Examinations, March-2016

Artificial Intelligence

Time: 3 hours Max. Marks: 70

*Note: Answer ALL questions in **Part-A** and any FIVE questions from **Part-B***

Part-A (10 X 2=20 Marks)

1. What is AI? State its applications.
2. Compare depth first search and breadth first search.
3. Define modus ponen inference rule. Give its significance.
4. Show that given formula is unsatisfiable by giving tableau proof $(A \wedge B) \wedge (B \rightarrow \wedge \sim A)$.
5. List the characteristics of expert systems.
6. Define joint probability and conditional probability with example.
7. What is unsupervised learning? How it differs from supervised learning?
8. Why activation function is required in neural network? Describe sigmoid function.
9. List the different types of fuzzy membership functions.
10. What is semantic analysis?

Part – B (5 X 10=50 Marks)

11. a) Draw the state space graph for the 8-puzzle problem for the initial state (6)

3	7	6
5	1	2
4	-	8

5	3	6
7		2
4	1	8

Goal state

b) Explain the A* algorithm with example. (4)

12. a) Use Resolution refutation to prove that Gray elephant always like the pink elephant using the following information (7)
    i. Sam, Clyde and Oscar are Elephants.
    ii. Sam is pink.
    iii. Clyde is Gray and likes Oscar.
    iv. Oscar is either Pink or gray (but not both) and likes Sam.

    b) Describe knowledge representation using frames. (3)

13. a) What is an expert system? Describe the major components of an expert system. (5)
    b) Given that probability of the statement 'John has a viral" is 0.20. Probability of John being observed sneezing when he had viral is 0.8 and probability of John being observed sneezing when he did not have viral is 0 .2. Find the probabilities of the following statements.
    i. John having viral if he is seen sneezing
    ii. John having viral if he is not sneezing (5)

14. a) What is inductive learning? Explain how it is used in decision trees with an example? (5)
    b) Explain the Perceptron learning algorithm. (5)

15. a) Write the Grammar and draw a parse tree for the sentence " The boy goes to the market". (8)
    b) Write the location case for the following sentence "The book is lying on the large table". (2)

16. a) What is alpha-beta pruning? Show how it improves the performance of the minmax procedure with an example. (5)
    b) Explain the conversion of a formula in propositional logic to its CNF with an example. (5)

17. Write short notes on
    i. Importance of Bayesian networks (3)
    ii. Backpropagation learning (3)
    iii. Difference between simple and recursive transition networks. (4)

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