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Code No. : 41516 AI

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (I.T.) IV Year I-Semester Main Examinations, December-2017

Artificial Intelligence

Time: 3 hours

Max. Marks: 70

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

Part-A (10 × 2 = 20 Marks)

- Outline four applications of AI.
- What is State space search?
- What is Alpha-Beta Pruning?
- Find resolvent of the clauses in the set {AV B, ~AV D, C V~B}
- List the approaches to Knowledge representation.
- What are the programming techniques in Prolog?
- What is an Expert System?
- State and prove Bayes theorem.
- Define Artificial Neural Networks.
- List some commonly used activation functions.

Part-B (5 × 10 = 50 Marks)

- Explain A* algorithm with an example. [5]
 - What is Manhattan distance heuristic? Solve the following 8-puzzle problem by using Manhattan distance heuristic. (g(n) = depth of node n in the search tree). [5]

3	7	6
5	1	2
4		8

Start state

5	3	6
7		2
4	1	8

Goal state

- Write MINIMAX procedure and illustrate the method with the game of Tic-Tac-Toe. [5]
 - Show that a set $S = \{ \sim(A \vee B), (B \rightarrow C), (A \vee C) \}$ is consistent using Tableau method [5]
- Develop the prolog code to find GCD of two integers. [4]
 - Discuss about knowledge representation using frames. [6]
- Discuss in details Truth Maintenance Systems [4]
 - For the Belief Network given below and the corresponding probabilities, compute the following probabilities. [6]
 - $P(B, \sim E, A, J, M)$
 - $P(\text{John calls} \mid \text{Burglary})$



