Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

SEVENTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

Course Code: IT407

Course Name: KNOWLEDGE ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks. Marks

1 a) List the problem characteristics in AI? (3)

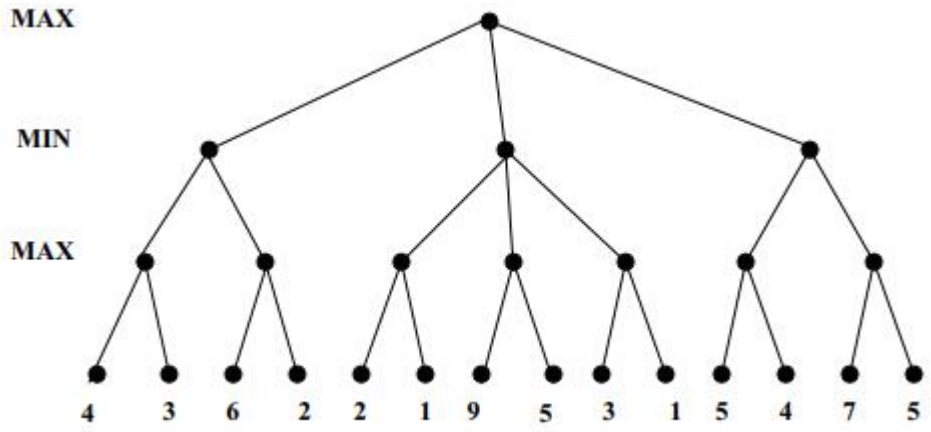
b) Write initial state, goal state, set of rules and solution search tree for the 8-puzzle problem. (5)

c) Discuss AO* algorithm with an example (7)

2 a) Illustrate the use of lists in Python with example. (4)

b) Mention the applications of AI. (3)

c) Show alpha-beta pruning for the following tree (8)



3 a) What are the various issues in hill climbing? (5)

b) What is heuristics? Suggest two heuristics to solve 8 puzzle. (3)

c) Given three matrices $A_1(3x4)$, $A_2(4x10)$, $A_3(10x1)$. Find out the best cost and optimal path for matrix multiplication $A_1A_2A_3$ using problem reduction. (7)

PART B

Answer any two full questions, each carries 15 marks.

4 a) Convert the following sentences to logic and then to clause form. (6)

1. All Romans were either loyal to Caesar or hated him.
2. Everyone is loyal to someone.
3. People only try to assassinate rulers they are not loyal to.

b) What is the difference between the two quantifiers in the logics? (2)

c) Describe the following : (7)

i. Learning by parameter adjustment

ii. Learning by chunking

5 a) What do you mean by unification? How it is useful in logic? (4)

b) What is Herbrand's theorem? (4)

c) What is rote learning? What are the issues, illustrated by it,is relevant to more complex learning? (7)

6 a) Consider the following sentences. (8)

1. Marcus was a man.
2. Marcus was a Pompeian.
3. All Pompeians were Romans.
4. Caesar was a ruler.
5. All Romans were either loyal to Caesar or hated him.
6. Everyone is loyal to someone.
7. People only try to assassinate rulers they are not loyal to.
8. Marcus tried to assassinate Caesar.

i. Convert the above sentences to clause form.

ii. Using resolution prove that "*Marcus hates Caesar"*.

b) Explain Winston's Learning Program with example (7)

PART C

Answer any two full questions, each carries 20 marks.

7 a) Differentiate between Supervised and Unsupervised learning. (10)

b) Explain the architecture of Expert systems with suitable diagram (6)

c) Name any four situations or scenarios where expert systems are not good at. (4)

8 a) Explain Symbolic AI (10)

b) How frames can be used for representing domain knowledge? (5)

c) What are semantic networks? (5)

9 a) Pictorially explain Recurrent Networks and describe the Back Propagation in Recurrent network. (10)

b) What is MOLE & SALT? Give the steps involved in the acquisition process for both. (10)

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