Reg No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SEVENTH SEMESTER B.TECH DEGREE EXAMINATION(R&S), DECEMBER 2019
Course Code: IT407
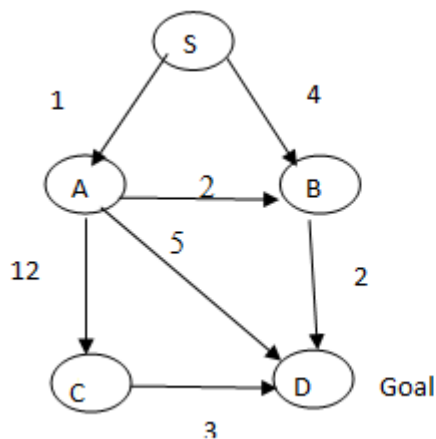### Course Name: Knowledge Engineering

Max. Marks: 100   Duration: 3 Hours

PART A
Answer any two full questions, each carries 15 marks.

Marks

1	a)	Define the term 'Artificial Intelligence'.	(3)
	b)	Write initial state, goal state, set of rules for "Water Jug Problem"	(5)

You are given two jugs, a 4-gallon one and a 3-gallon one, a pump which has unlimited water which you can use to fill the jug, and the ground on which water may be poured. Neither jug has any measuring markings on it.

How can you get exactly 2 gallons of water in the 4-gallon jug?

	c)	Differentiate A* and AO* algorithm	(7)
2	a)	Write the algorithm for 'Generate and Test'.	(4)
	b)	Illustrate the use of Dictionaries in Python with example.	(4)
	c)	Explain MINIMAX search procedure with example	(7)
3	a)	Suggest some solutions for the issues of simple Hill Climbing algorithm	(4)
	b)	What is simulated annealing?	(4)
	c)	Find out the best cost and best path for following graph	(7)

Heuristic values	
S	7
A	6
B	2
C	1
D	0

PART B
Answer any two full questions, each carries 15 marks.

4 a) Consider the following sentences: (8)
1. John likes all kinds of food.
2. Apples are food.
3. Chicken is food.
4. Anything anyone eats and isn't killed by is food.
5. Bill eats peanuts and is still alive.
6. Sue eats everything Bill eats.
   Prove by forward chaining that "*John likes peanuts* "

   b) Explain learning by taking advice. How is it different from rote learning?   (7)

5 a) Assume the following facts: (7)
1. Steve only likes easy courses.
2. Science courses are hard.
3. All the courses in the basket-weaving department are easy.
4. BK301 is a basket-weaving course.
   Use resolution to prove that *"Steve likes BK301 course"*.

   b) Describe Explanation- based learning.   (8)

6 a) Write down the unification algorithm.   (4)

   (b) Perform unification on the following :   (4)
   i.   Knows(Ravi,Ram) & Knows (y,Ram)
   ii.   Knows (Ravi,x) & Knows (y,Rani)

   c) Write the Candidate Elimination algorithm for narrowing the version space?   (7)
   Explain the algorithm with an example.

PART C
Answer any two full questions, each carries 20 marks.

7 a) What is a Hopfield network? Mention the features of Hopfield network.   (7)

   b) Draw a simple Hopfield network..   (3)

   c) State and explain the general steps involved in the development of Expert   (10)
   Systems?

8 a) Explain Connectionist AI   (10)

   b) Discuss about knowledge representation in expert system   (10)

9 a) Explain Unsupervised Learning Neural Network with examples   (10)

   b) Illustrate with an example knowledge acquisition   (10)

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