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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Sixth Semester

CS16603 – ARTIFICIAL INTELLIGENCE*(Computer Science and Engineering)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**Answer **ALL** questions**PART A - (10 X 2 = 20 Marks)**

	CO	RBT
1. List various application domains of artificial intelligence.	1	U
2. Discuss the drawbacks of hill climbing algorithm	1	U
3. What are the different approaches in knowledge representation?	2	R
4. What is the need for partitioned semantic net?	2	U
5. What is matching in production systems?	3	U
6. What is certainty factor?	3	R
7. What is Inductive Learning?	4	R
8. What is an activation function in Artificial Neural Network?	4	R
9. Mention the role of expert system shell.	5	U
10. Give some examples of expert systems.	5	R

PART B - (5 X16 = 80 Marks)

11. (a) (i) Discuss in detail the various approaches to solve the Tic-tac-toe problem. **(8)** **1** **AP**
- (ii) Illustrate Breadth First and Depth First search with pseudo code and example. **(8)** **1** **AP**

(OR)

- (b) (i) Use Constraint Satisfaction problem for solving Crypt arithmetic problem and provide the algorithm. **(10)** **1** **AP**
- (ii) Briefly discuss about the problem characteristics of production systems. **(6)** **1** **AP**
12. (a) (i) Assume the following facts: **(8)** **2** **AP**
- All cats like fish.
 - Cats eat everything they like
 - Tom is a cat
- Use resolution to answer the question “Does Tom eat fish?”

- (ii) Construct a semantic network and frame representation for the following sentences: **(8) 2 AP**

A trout is a fish. A fish has gills. A fish has fins. Fish is a food.
Fish is an animal. An apple is a fruit. Fruit has a stem. Fruit is a food. Fruit is a vegetable.

(OR)

- (b) Use minimax algorithm and alpha-beta pruning algorithm for game playing with suitable examples. **(16) 2 AP**
13. (a) Consider the following sentences **(16) 3 AP**
- John likes all kinds of food.
 - Apples are food.
 - Chicken is food.
 - Anything anyone eats and isn't killed by is food.
 - Bill eats peanuts and is still alive.
 - Sue eats everything that Bill eats.

Prove that "John likes peanuts" using forward chaining and backward chaining.

(OR)

- (b) (i) Illustrate how statistical reasoning is done through Bayesian network **(8) 3 AP**
- (ii) Briefly explain how reasoning is done using fuzzy logic. **(8) 3 AP**
14. (a) (i) Illustrate Winston's learning concept with suitable examples. **(8) 4 U**
- (ii) Demonstrate the role of genetic operators in genetic algorithms. **(8) 4 U**

(OR)

- (b) (i) Explain learning in Decision tree with an example. **(10) 4 U**
- (ii) Briefly discuss about explanation based learning. **(6) 4 U**
15. (a) Explain with a neat diagram, the architecture of an expert system. Also list out its characteristic features. **(16) 5 U**

(OR)

- (b) Explain XCON and DART expert system in detail. **(16) 5 U**