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**CSE401**

Enrol. No. ....

[ET]

**END SEMESTER EXAMINATION : APRIL-MAY, 2019**

**ARTIFICIAL INTELLIGENCE**

*Time : 3 Hrs.*

*Maximum Marks : 70*

**Note:** *Attempt questions from all sections as directed.*

**SECTION – A (30 Marks)**

*Attempt any five questions out of six.*

*Each question carries 06 marks.*

1. Write AO\* algorithm? Use with suitable example how AO\* algorithm is used for problem reduction?
2. Draw a semantic network representing the following knowledge :

Every vehicle is a physical object. Every car is a vehicle. Every car has four wheels. Electrical system is a part of car. Battery is a part of electrical system. Pollution system is a part of every vehicle. Vehicle is used in transportation. Swift is a car.

3. Using constraint satisfaction procedure solve the following crypt-arithmetic problem

P.T.O.

CROSS  
+ ROADS  
-----  
DANGER

4. Write various Knowledge Representation issues. Provide the solution of any of two issues.
5. Explain the difference between :
  - (a) Deductive and inductive learning
  - (b) Forward and Backward reasoning
6. Discuss the significance of sensors and vision system in robotics designing.

**SECTION – B (20 Marks)**

*Attempt any two questions out of three.*

*Each question carries 10 marks.*

7. Discuss the expert system in domain of medicine using suitable case study? Explain its architecture describing its components.
8. (a) Victor has been murdered, and Arthur, Bertram, and Carleton are the only suspects (meaning exactly one of them is the murderer). Arthur says that Bertram was the victim's friend, but that

Carleton hated the victim. Bertram says that he was out of town the day of the murder, and besides, he didn't even know the guy. Carleton says that he saw Arthur and Bertram with the victim just before the murder. You may assume that everyone—except possibly for the murderer—is telling the truth. Use Resolution to find the murderer. In other words, formalize the facts as a set of clauses, prove that there is a murderer, and extract his identity from the derivation.

(5)

(b) Write a prolog program to enter three side and find the whether given triangle is right angle or not.

(5)

9. (a) What is a Script? Construct a script for going to a bank to withdraw money.

(5)

(b) Describe the basic concepts of control systems, feedback components, actuators and power transmission systems used in robots.

(5)

### SECTION – C

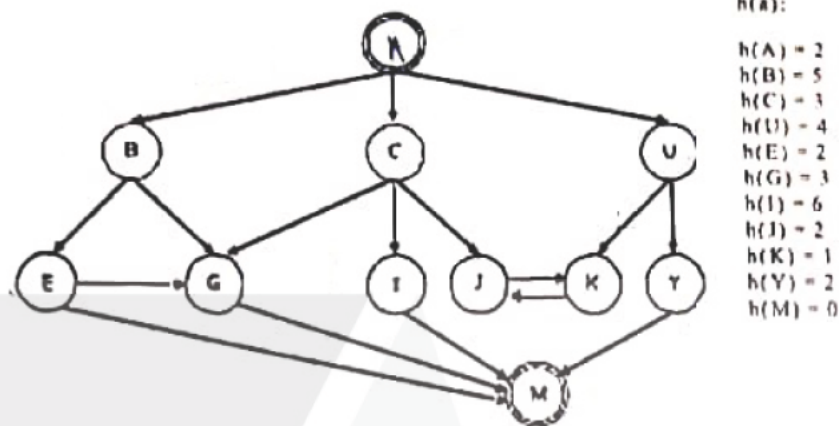
(20 Marks)

(Compulsory)

10. (a) Find the search steepest Ascent hill climbing for following graph.

(10)

P.T.O.



(b) Consider the following clausal form :

isa(X, living\_thing) <- isa(X, animate)

isa(X, animate) <- isa(X, human)

isa(X, human) <- isa(X, man)

isa(Jay, man)

Represent forward reasoning inference. (5)

(c) Develop a parse tree for the sentence "Rita went to the temple by cycle" using the following rules :

S -> NP VP

NP -> P

NP -> DET

VP -> VPP

PP -> PREP PP

N -> Rita | temple | cycle

V -> went

DET -> the

PREP -> to | by (5)