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CSE401 Enrol. No. .....

[ET]

END SEMESTER EXAMINATION : NOV. – DEC., 2017

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. Explain the effect of overestimation and underestimation of it on A* algorithm.

2. What is the process of perception as perceived by the robot? Why it is difficult for robot?

3. Give advantage and disadvantage of Semantic Net. Construct partitioned semantic net representation for the following sentence: God help those who help themselves.

P.T.O.

4. Explain various approaches and properties of knowledge representation.

5. What are the heuristics and what is their importance? Describe their types with the help of examples. Also justify the statement :

"Heuristics are not sure to lead to a solution yet the field of AI is full of them".

6. Derive a parse tree for "Bill loves the frog" using the following rewrite rules :

S ---> NPVP

NP ---> N DET N

VP ---> V NP

DET ---> the

V ---> loves

N ---> Bill frog

(i) Using top-down parsing

(ii) Using bottom-up parsing

SECTION – B (20 Marks)

Attempt any **two** *questions out of* **three.**

Each question carries **10** *marks.*

7. What is conceptual dependency? Give conceptual dependency representation for :

(a) Joe pushed the door.

(b) I gave book to Ram.

8. Using constraint satisfaction procedure solves the following crypt-arithmetic problem

```
  CROSS
+ ROADS
---------
 DANGER
```

9. Convert the following sentences into predicate logic and then its clause form :

(i) Coconut is a biscuit

(ii) Mary is a child who takes coconut

(iii) John loves child who .takes biscuits

(iv) For a triangle ABC it is given that sum of interior angle is 180 degree

SECTION – C (20 Marks)

(Compulsory)

10. (a) Find the value of the function "maximum" in hill-climbing, assuming the function to be negative of the number of tiles "out of place" in the 8 puzzle problem, give the initial and goal states as shown :

P.T.O.

Initial State

2	8	3
1	6	4
7	–	5

Goal State

1	2	3
8	–	4
7	6	5

(10)

(b) Give two application areas of robotics. How a robot gets various sensory information? Discuss image understanding process (robotic vision) in robotics. (10)