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Printed Pages : 4

TIT702

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0151

Roll No.

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B.Tech

(SEM VII) ODD SEMESTER THEORY EXAMINATION 2009-10
ARTIFICIAL INTELLIGENCE

Time : 3 Hours]

[Total Marks : 100

Note : Attempt *all* questions.1 Attempt any **four** parts : **5×4=20**

- (a) What do you understand by Artificial Intelligence ? Why AT is important ?
- (b) Discuss the problem of "Water Jug problem" with Heuristic search techniques.
- (c) Differentiate between Depth-first search and Breadth first search.
- (d) Explain AO* algorithm with example.
- (e) When will Hill climbing search technique fail ? Do steepest ascent hill climbing always find solutions ? How might some problem be overcome in search ?
- (f) Define and describe the difference between knowledge, belief, hypothesis and data.



2 Attempt any **four** parts : **5×4=20**

- (a) Explain Top Down parsing techniques with examples.
- (b) Explain different type of Chomsky's hierarchy grammars.
- (c) Differentiate between deterministic and nondeterministic parsers.
- (d) Develop a parse tree for the sentence "Mr. Kushwaha on the table" using the following rules :

$S \rightarrow NP VP$

$NP \rightarrow N$

$NP \rightarrow DET N$

$VP \rightarrow VPP$

$PP \rightarrow PREP NP$

$N \rightarrow \text{Mr. Kushwaha} / \text{table}$

$V \rightarrow \text{Slept}$

$DET \rightarrow \text{the}$

$PREP \rightarrow \text{ON}$

- (e) Explain Fillmore's case grammar with example.
- (f) Write short notes on sentence generation.

Attempt any **two** parts : **10×2=20**

- (a) (i) Explain semantic Nets with example.
- (ii) Draw a hierarchical network to represent the information.

Mouse is a rodent; rodent is a mammal;
A mammal has color and also drinks water.

- (b) Explain Inference Rules in brief with example. Represent such expression in FOPL.
- (i) All employees earning \$500 or more per year pay taxes.
- (ii) Some employees are sick today.
- (c) Explain Horn clause. What is the procedure of clausal conversion with example ?

Attempt any **two** parts : **10×2=20**

- (a) Differentiate between expert system and problem solving system. Why is it important that an expert system be able to explain the why and how question related to a problem solving session ?
- (b) Write short notes on :
 - (i) MYCIN
 - (ii) Compare the different type of problem solved by MYCIN and DENDRAL.
- (c) Explain Meta knowledge. Under what conditions would it make sense to use both forward and backward chaining ? Give an example where both are used.

5 Attempt any **two** questions :

10×2=20

- (a) What is LISP ? Why it is popular among AI practitioner ? Write a LISP program which returns the minimum of three numbers.
 - (b) (i) What do you understand by pattern recognition ?
(ii) Differentiate between structured description and symbolic description.
 - (c) Explain PROLOG. Write a PROLOG program that creates knowledge base of family relationships such as father, mother, brother, sister, parents. Use clauses such as male, female to define rules.
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