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B. Tech. 6th Semester (Information Technology)

Examination, May-2013

INTELLIGENT SYSTEMS

Paper-CSE-304-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : Attempt five questions in all. Question No. 1 is compulsory and attempt at least one question from each section.

1. (a) What is Artificial Intelligence ? Describe the various applications of AI.
- (b) Define Turing Test and Chinese Room Test.
- (c) Write down the various limitations of Logic.
- (d) What is Knowledge Base ? How it is different from Database ?
- (e) Define certain and uncertain knowledge with the help of example.
- (f) Differentiate between Generic node and individual node of semantic networks.
- (g) Convert the following into CNF :

$$((A \rightarrow B) \leftrightarrow C)$$

(2)

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- (h) In case of Hill Climbing Problem, what would happen when two nodes are having the same values of heuristic function and how would you resolve it ?
- (i) Differentiate between monotonic and non-monotonic reasoning.
- (j) Explain the concept of Knowledge Acquisition.

10×2=20

Section-A

2. Discuss the Hill Climbing Algorithm, its problem and its solution with the help of example. 20
3. (a) Explain A* Algorithm with the help of example. 10
- (b) Write a program in PROLOG to concatenate two lists. 10

Section-B

4. (a) Define probability. Differentiate between conditional and unconditional probability with the help of example. 5

- (b) Explain Dempster Shafer Theory. Using Dempster Shafer Approach, find the uncertainty of the following prediction :

It is rainy season and there is heavy cloud cover. The prediction is :

“There are 80% chances of rain today.” However, there is uncertainty regarding the type of cloud cover. Some expert tells he is confident that there are 90% chances of these types of bringing rains.

15

5. (a) What are scripts ? Make a script of the following event :

Going to bank for withdrawal, filling the withdrawal slip, presenting to the cashier, getting money and leaving the bank.

10

- (b) Explain the inferencing rules in propositional logic. Solve the following problem with the help of these rules :

Test the validity of following argument :

“If milk is black, then every cow is white. If every cow is white then, it has four legs. If every cow has four legs, then every buffalo is white and brisk. The milk is black. Therefore, the buffalo is white.”

10

Section-C

6. (a) Differentiate between planning and partial order planning. 10
- (b) Explain statistical reasoning with the help of example. 10
7. (a) Define fuzzy reasoning. What are the various operations on fuzzy set? 10
- (b) Explain symbolic reasoning under uncertainty. 10

Section-D

8. Explain the architecture of Expert System. Differentiate between Rule Based and Frame Based Expert Systems. 20
9. (a) Define Genetic Algorithm. Why we change one digit of the offspring in mutation stage? 10
- (b) What do you mean by natural language processing? Explain its analysis techniques. 10