M.Tech. (CE) 3rd Sem. Exam. – January, 2012
Knowledge Based System Designs (MTCE-701A)

<u>**Time: 3 Hours**</u>   <u>**Max. Marks:100**</u>

<u>NOTE:</u> Attempt any FIVE questions.

1.   Consider the following facts: -   20
    -The members of Young Club are Joe, Sally, Bill and Ellen
    -Joe is married to Sally
    -Bill is Ellen's brother
    -The spouse of every married person in the club is also in the club
    -The last meeting of club was at Joe's House
   a)   Represent these facts in FOPL
   b)   Construct resolution proof of the fact that 'Ellen is not married'

2.a)   Construct Partitioned semantic net representations for the following: -   10
    i)   Every batter hit a ball
    ii)   All the batters like the pitcher.
   b)   What is a frame? How is it different from Semantic Net? Explain by giving example.   10

3.a)   Explain the architecture of knowledge based system with help of a diagram.   10
   b)   What do you mean by forward chaining and backward chaining? Explain by examples.   10

4.a)   Compare & contrast DFS and BFS by giving suitable example. Also write their merits and demerits.   10
   b)   Explain A* algorithm by giving example.   10

5.   What are major problems with Hill climbing Techniques? How are they handled? Explain various hill climbing algorithms by giving suitable examples.   20

6.a)   How uncertainty is managed in expert systems? Explain. **10**
   b)   Explain Dempster Shafer Theory in detail.   10

7.a)   Explain probabilistic methods used to manage uncertainty. **10**
   b)   What is an agent? Explain its structure.   10

8.   Write short notes on: -   20
    a)   Baye's Network   b)   Fuzzy Logic
    c)   Common Sense reasoning   d)   Heuristic Search

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