Seat No. : _____

LC-109

April-2014

4th Year M.Sc. (CA & IT) (Integrated)

Artificial Intelligence & Expert System

Time : 3 Hours] **[Max. Marks : 100**

1. (a) Answer the following : (any **five**) **10**

   (1) Explain artificial intelligence problem.

   (2) What is problem ? Explain problem space and search.

   (3) Explain heuristic search.

   (4) Explain knowledge in brief.

   (5) Differentiate between BFS and DFS.

   (6) Differentiate between OR-Graph and AND-graph.

   (b) Attempt : (any **two**) **10**

   (1) Explain different approaches to represent knowledge in detail.

   (2) Briefly discuss all characteristics of problem.

   (3) Differentiate with example, simple Hill-climbing and Steepest Ascent Hill-climbing problem.

2. Answer the following : (any **two**) **20**

   (a) Write A* algorithm, explain how it is better than best first search technique. Give one example to prove it.

   (b) How simple facts are represented in logic by predicate logic ? Explain different types of format to represent predicate logic with its limitations.

   (c) Elaborate forward Vs backward reasoning. Explain Forward and Backward chaining rule in brief.

3. Answer the following : (any **two**) **20**

   (a) What are slots ? How to represent semantic net for slots ? Using example explain how slots can be used as a frame.

   (b) Explain minimax search, write algorithm of minimax search.

   (c) How alpha-beta cutoff is more better than minimax search ?

4. Answer the following : (any **two**) **20**

(a) What is natural language process. Explain each step of process in detail with example.

(b) Differentiate between expert system and conventional system.

(c) Consider the following facts :

- Student of fourth year M.Sc. are Jeel, Jimi, Namita, Jyoti, Dhara, Swati and Pari.
- Jeel is good friend of Jimi.
- Namita is good friend of Dhara.
- Jimi is swati's sister.
- Jeel and Pari is sharing book of AI.
- AI is subject in fourth year M.Sc.
- All Students like AI.

(i) Represent these facts in predicate logic.

(ii) Prove that "Jeel will share book with Swati".

5. (a) Write a turbo prolog program which performs following steps : **10**

(i) A + B = C

(ii) C + D = E

(iii) E – D = C

(iv) C – B = A

(v) Print "A" as a output.

(b) Write turbo prolog program to perform following operations on list : **10**

list is [a, b, a, c, a, d].

(i) Delete all "a" in list.

(ii) Delete all "b" in list.

(iii) Add "e" at the end of list.

(iv) Delete first and last character in list.

(v) Add "f" in middle of list.

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