ST. XAVIER'S COLLEGE
(AUTONOMOUS)

3rd. SEMESTER EXAMINATION
NOVEMBER - DECEMBER 2013
M.Sc. Computer Science

CMSM 4302   ARTIFICIAL INTELLIGENCE

Thursday, 28th November 2013   11:30am to 3:30pm

Time allowed : **4 hours**

Full Marks : **80**

Instructions:

- Of the questions attempted, the answers to only the first required number of questions (as stipulated in the question paper) will be evaluated. **So please do not attempt extra questions**.

- Use fountain pen or ball-point pen of **blue** or **black ink**.

- Answer in your own words as far as practicable.

- Do not write anything on the Question paper other than your Roll No.

(Answer **Question 1** and **Any Four** from the rest.)

$(16 \times 5 = 80)$

1. Answer **Any Four**. $(4 \times 4 = 16)$
   (a) Explain the difference between solitary and conversational problems with suitable example.
   (b) Explain the working of unification algorithm with suitable example.
   (c) Explain means end analysis algorithm with an example.
   (d) Explain the difference between recoverable and irrecoverable problems with suitable example.
   (e) What is turing test?

2. (a) What is an agenda? Write an algorithm to perform agenda driven search.
   (b) Write down the AO algorithm. Explain your algorithm with a suitable example.
   $(2+6)+(5+3)$

3. Write down an algorithm to perform constraint satisfaction. Discuss the algorithm with suitable example. $(8+8)$

4. Explain with an example how the game of tic-tac-toe is solved using MINIMAX procedure. Show how alpha-beta cut-off helps in optimizing this procedure. $(10+6)$

5. (a) Write an example to illustrate property inheritance in knowledge representation.
   (b) Discuss briefly the various issues of knowledge representation.
   (c) Describe the steepest ascent hill climbing algorithm. $(3+7+6)$

6. (a) Consider the following sentences:
   John likes all kinds of food.
   Apples are food.
   Chicken is food.
   Anything anyone eats and isn't killed by it, is food.
   Bill eats peanuts and is still alive.
   Sue eats everything Bill eats.
   (i) Translate these sentences into formulas using Predicate Logic.
   (ii) Prove "John likes peanuts" using resolution.
   (b) Write down the algorithm for Propositional Resolution. Explain the algorithm with a suitable example. $(6+4)+(4+2)$

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