

INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination (Backlog), Nov.-Dec. 2016

B. Tech in Computer Science Engineering, Semester VII

Roll No.....

Time: 3 hours

Max. Marks: 100

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Writing appropriate units, nomenclature, and drawing neat sketches/schematics/ flow chart wherever, required are an integral part of the answer.

Q.1A	Objective type multiple choice questions (10 questions @ 1 mark)	10
i.	Strong AI is ? a) The embodiment of human intellectual capabilities within a computer b) A set of computer programs that produce output that would be consider to reflect intelligence if it c) The study of mental faculties through the use of mental models implemented on a computer. d) All of above	
ii.	What was originally called the "imitation game" by its creator? a) The Logic Theorist b)The Turing Test c) Cybernetics d) None of the above	
iii.	In prolog $X = 5$ will be given by: a) $X = 3 + 2$ b) X is $3 + 2$ c) $X \leftarrow 3 + 2$ d) $X = 3$ add 2	
iv.	What is Artificial intelligence? a) Putting your intelligence into Computer b) Programming with your own intelligence c) Making a Machine intelligent d)Playing a Game	
v.	A* Algorithm is based on a)Breadth First Search b) Depth First Search c) Best First Search d) Hill climbing	
vi.	A Horn clause is a clause having - a) At least one of the literal is negative b)At most one of the literal is positive c) At most one of the literal is negative d) At least one of the literal is positive	

vii.	Robot machine might have cameras and infrared range finders for and various motors of a) Sensors, Agents c) Actuators, Sensors	b) Agents, Actuators d) Sensors, Actuators
viii.	If two event A and B are independent than select the incorrect option. a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$ c) $P(A \cup B) = P(A) + P(B)$	b) $P(A \cap B) = P(A)P(B)$ d) $P(A B) = P(A)$
ix.	Which is not a type of First Order Logic (FOL) Sentence? a) Atomic sentences c) Quality sentence	b) Complex sentences d) Simple Sentence
x.	A production rule consists of a) A set of Rule c) Both (a) and (b)	b) A sequence of steps d) Arbitrary representation to problem

Q.2.	Short answer type questions (4 questions @ 2.5 marks)	10
	Define the following terms:	
i.	Horn Clause	
ii.	Fuzzy Logic	
iii.	Conditional Probability	
iv.	Unification Algorithm	

Q.3A	Consider the following axiom: John likes all kinds of food. Apples are food. Chicken is food. Anything anyone eats and isn't killed by is food. Bill eats peanuts and is still alive.	05
i.	Represent these axioms in first order predicate logic.	
ii.	Convert each formula to clause form.	

Q.3B	In Q.3A Prove that "John like peanuts" using resolution.	05
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Q.4A	Using resolution by refutation, Prove R when following axioms are given. $P, (P \cap Q) \rightarrow R, (S \cup T) \rightarrow Q, T$	05
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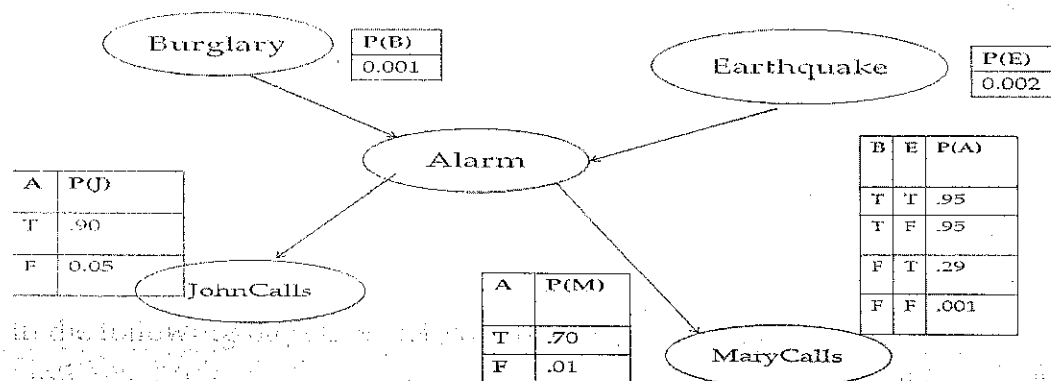
Q.4B	Prove by Resolution	05
i.	If the mango is yellow , then it is ripened, but if it is not yellow , then it has not ripened and sour.	
ii.	If the mango is either ripened or sour then it is tasteless.	
iii.	The mango is spoiled, if it is tasteless. Can we prove that the mango is yellow? Spoiled? Tasteless?	

Q.5A	We have three bags that each contains 100 marbles. Bag 1 has 75 red and 25 blue, Bag 2 has 60 red and 40 blue, Bag 3 has 45 red and 55 blue. We choose one of the bags at random and from that bag choose one of marble at random and see that	05
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chosen marble is blue. What is the probability that bag 2 was chosen?

- Q.5B In the following Bayesian Network of Burglar alarm problem.
Find the probability of the event that the alarm has sounded but neither a burglary nor an earthquake has occurred, and both Mary and John call:

05



- Q.6A Show the conceptual dependency representation of the following sentences.

05

- John gave a book to Mary.
- John kicked the ball.

- Q.6B Define heuristic function. Give an example heuristic function for Blocks World Problem.

05

OR

- Q.6B Solve 6 Queens Puzzle Problem. Describe the rules followed.

05

- Q.7A What is ANN? Discuss Back propagation in ANN.

05

- Q.7B What is Natural Language Processing? Discuss various stages in Natural Language Processing.

05

OR

- Q.7B How fuzzy logic is different from conventional binary logic? Explain it with suitable example.

05

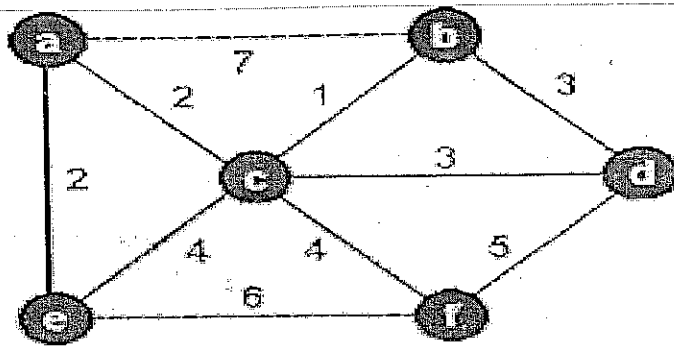
- Q.8A Consider the following blocks world problem, solve it using Goal Stack Planning :

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Start: ON(B,A) $\cap$ ONTABLE(A) $\cap$ ONTABLE(C) $\cap$ ONTABLE(D) $\cap$ ARMEMPTY
Goal : ON(C,A) $\cap$ ON(B,D) $\cap$ ONTABLE(A) $\cap$ ONTABLE(D)

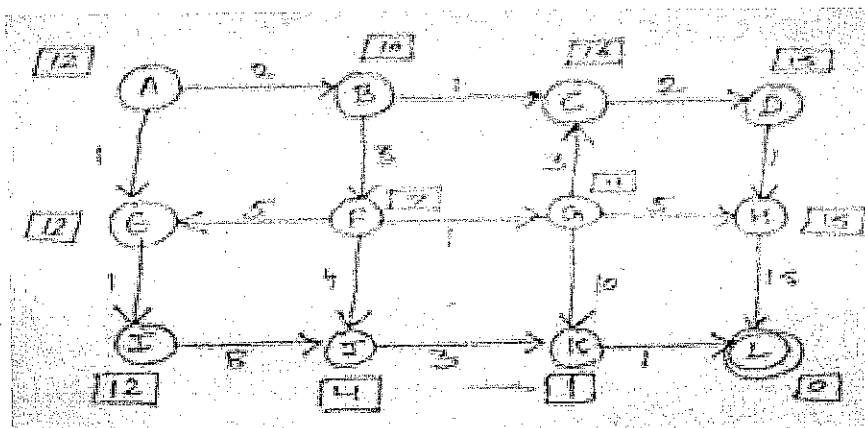
- Q.9A Traverse following graph using BFS and DFS, Where starting state is (a):

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Q.9B Solve the following graph using A * Algorithm. Values marked in square are heuristic values.

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OR

Q.9B Trace the constraint satisfaction procedure solving the following cryptarithmic problem.

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$$\begin{array}{r}
 \text{E A T} \\
 + \text{T H A T} \\
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 \text{A P P L E}
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