



Name :

Roll No. :

Invigilator's Signature :

CS/BCA/SEP.SUPPLE/SEM-6/BCAE-601B/2012

2012

INTELLIGENT SYSTEMS

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

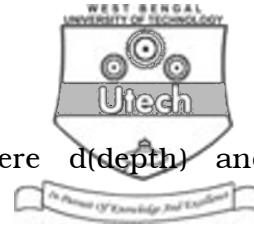
GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following :

10 × 1 = 10

- i) Jack is the parent of Jon can be represented by
 - a) parent (Jon, Jack)
 - b) is parent (Jack, Jon)
 - c) parent (Jack, Jon)
 - d) none of these.
- ii) AI is applied for
 - a) speech and language processing
 - b) game playing
 - c) scientific analysis
 - d) all of these.
- iii) Skolem function is used in
 - a) natural deduction
 - b) unification algorithm
 - c) conversion to clausal form
 - d) semantic net.



- iv) The time complexity of BFS where d (depth) and b (branch) is
 - a) $O(b^d)$
 - b) $O(bd)$
 - b) $O(d^b)$
 - d) none of these.
- v) The Modus Ponens inference rule "From P and $P \rightarrow Q$ " infers
 - a) P
 - b) Q
 - c) $P \leftrightarrow Q$
 - d) none of these.
- vi) In genetic algorithm the new generation is formed by
 - a) mutation
 - b) chromosome crossover
 - c) neither (a) nor (b)
 - d) both (a) and (b).
- vii) A Bayesian network is a / an
 - a) tree
 - b) undirected graph
 - c) directed graph
 - d) none of these.
- viii) The study of the nature of the knowledge is
 - a) meta knowledge
 - b) epistemology
 - c) procedural knowledge
 - d) declarative knowledge.
- ix) An ontology
 - a) uses frames for hierarchical inferencing
 - b) provides a vocabulary for expressing knowledge
 - c) represents relations, objects and properties
 - d) is more promiscuous than perspicacious.
- x) If P is sentence in propositional logic then $P \vee \sim P$ is
 - a) satisfiable
 - b) contradiction
 - c) valid
 - d) none of these.



GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Briefly explain AND-OR graph with suitable example. 5
3. Construct the truth table for the expression $(P \rightarrow Q) \wedge (Q \rightarrow P)$.
5
4. What do you mean by genetic algorithm ? Discuss briefly. 5
5. What is the difference between knowledge and intelligence ?
6. What is inference engine ? How does it work ? 3 + 2

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. a) What is Semantic net ? Explain. 5
b) Describe Hopfield model. 5
c) What is fuzzy set ? Give one example of fuzzy set. 3 + 2
8. a) Describe AO* algorithm. 5
b) Describe the approaches of knowledge representation. 5
c) What are the problems that a Hill Climbing method may face ? Explain them. 5
9. a) What are the different characteristic features of Expert system ? 5



- b) What do you mean by knowledge acquisition ? 5
- c) Develop the parse tree for the sentence "The mean boy locked the dog in the house", using the following rules :
- $S \rightarrow NP VP PP$
 $NP \rightarrow DET N$
 $DET \rightarrow ART$
 $DET \rightarrow ART ADJ$
 $VP \rightarrow V NP PP$
 $PP \rightarrow PREP NP$ 5
10. a) Represent the following expressions in First Order Predicate Logic : 5
- (i) Some students are absent today
- (ii) All employees earning below Rs. 10,000 or equal per month not to pay taxes.
- b) Define abductive and inductive inferences with example. 5
- c) What is the difference between informed search and uninformed search ? 5
11. Write short notes on any *three* of the following : 3 × 5
- a) Transition networks
- b) Travelling Salesman Problem
- c) Best First Search
- d) Bayesian Network
- e) Knowledge acquisition.
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