INTELLIGENT SYSTEM (SEMESTER - 6)

CS/BCA/SEM-6/BCAE-601B/09

1. .....
Signature of Invigilator

2. ..... **Reg. No.**
Signature of the Officer-in-Charge

Roll No. of the Candidate

CS/BCA/SEM-6/BCAE-601B/09

ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009

INTELLIGENT SYSTEM (SEMESTER - 6)

Time : 3 Hours] [Full Marks : 70

INSTRUCTIONS TO THE CANDIDATES :

1. This Booklet is a Question-cum-Answer Booklet. The Booklet consists of **32 pages**. The questions of this concerned subject commence from Page No. 3.
2. a) In **Group – A**, Questions are of Multiple Choice type. You have to write the correct choice in the box provided **against each question**.
   b) For **Groups – B** & **C** you have to answer the questions in the space provided marked 'Answer Sheet'. Questions of **Group – B** are Short answer type. Questions of **Group – C** are Long answer type. Write on both sides of the paper.
3. **Fill in your Roll No. in the box** provided as in your Admit Card before answering the questions.
4. Read the instructions given inside carefully before answering.
5. You should not forget to write the corresponding question numbers while answering.
6. Do not write your name or put any special mark in the booklet that may disclose your identity, which will render you liable to disqualification. Any candidate found copying will be subject to Disciplinary Action under the relevant rules.
7. **Use of Mobile Phone and Programmable Calculator is totally prohibited in the examination hall.**
8. You should return the booklet to the invigilator at the end of the examination and should not take any page of this booklet with you outside the examination hall, **which will lead to disqualification**.
9. Rough work, if necessary is to be done in this booklet only and cross it through.

No additional sheets are to be used and no loose paper will be provided

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Marks Obtained

	Group – A										Group – B			Group – C			***Total Marks***	***Examiner's Signature***
Question Number																		
Marks Obtained																		

.....
Head-Examiner/Co-Ordinator/Scrutineer

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GROUP – A

(Multiple Choice Type Questions)

1. Choose the most correct alternatives of the following : $10 \times 1 = 10$

i) Min-Max role of game proceeds by attempting to

a) maximizing gain of opponent b) minimizing gain of self

c) maximizing gain of self d) maximizing loss of self. ☐

ii) A Bayesian network is a / an

a) tree b) directed graph

c) undirected graph d) none of these. ☐

iii) Theorem proving is an example of

a) procedural knowledge b) declarative knowledge

c) heuristic d) none of these. ☐

iv) "Everyone is loyal to someone" can be represented by ..... as provided loyal (x, y) means x is loyal to y.

a) $\forall x \exists y$ *loyal* (x , y) b) $\forall x \exists y$ *loyal* (y , x)

c) $\forall y \forall x$ *loyal* (x , y) d) $\forall x \forall y$ *loyal* (x, y). ☐

v) Plausibility *pl* and Belief *bel* of S are related by

a) *pl* (S) = 1-*bel* (S) b) *bel* (S) = 1-*pl* (S)

c) *pl* (S) = 1-*bel* (~ S) d) *bel* (S) = 1= *pl* (~ S). ☐

vi) The time complexity of BFS is

a) O (b^d) b) e^d

c) e^b d) O (d^b) . ☐

vii) The space complexity of the Depth-first search is

a) O (d) b) O (bd)

c) O (b^d) d) O (d^b) .

viii) Skolem function is used in

a) unification algorithm b) natural deduction

c) conversion to clausal form d) semantic net.

ix) According to the cognitive view of learning, ... largely determines what learners pay attention to, perceive, learn, remember and forget.

a) declarative knowledge b) conditional knowldege

c) prior knowledge d) procedural knowledge.

x) Knowledge coming from experience is

a) Belief b) Hypothesis

c) Epistemology d) Heuristics.

GROUP – B
(Short Answer Type Questions)

Answer any *three* of the following. 3 × 5 = 15

2. How do you distinguish between Knowledge based System & Expert System ?

3. What is the difference between Informed Search and Uniformed Search ?

4. What do you mean by production system ? Derive the parse tree for the sentence "Bill loves the frog" where the following rewrite rules are used.

S → NP VP

NP → N

NP → DETN

VP → V NP

DET → the

V → loves

N → bill | frog

5. What is the difference between Knowledge and Intelligence ?

6. Compare and Contrast between BFS & DFS.

GROUP – C

(Long Answer Type Questions)

Answer any *three* questions. 3 × 15 = 45

7. a) What is Neural Network ? 5

   b) Describe Hopfield model. 5

   c) Write down the WFF of the following statements : 5

      i) Jhon likes all fruits and Apple is fruit so John like Apple.

      ii) Some students are good students.

      iii) All children love their parents.

      iv) Marcus hate ruler and Ceaser is ruler so Marcus hate Ceaser.

      v) Rina likes food that Sima likes.

8. a) Describe with A* algorithm with example. 5

   b) Describe the approaches of Knowledge representation. 5

   c) What are the problems that a heuristic search may face ? Explain them. 5

9. a) What is Expert System ? Explain with example. 5

   b) What do you meant by knowledge acquisition ? 5

   c) Write down the algorithm of DFS. 5

10. a) Write down the steps to convert the predicates into clausal form. 7

    b) Prove or disprove with justification : 8

    $(\forall x) \{ P (x) \rightarrow \{ (\forall y) [P (y) \rightarrow P (f (x,y))] \& \{ \neg (\forall y) [Q (x,y) \rightarrow P (y)] \} \} \}$

11. Write short notes on any *three* of the following : 3 × 5

    a) Genetic Algorithm

    b) Heuristic Search

    c) 8 puzzle problem

    d) Predicate Logic

    e) Learning by Induction.

END