53 (CS 711) ARIN

2013

(December)

ARTIFICIAL INTELLIGENCE

Paper : CS-711

Full Marks : 100

Pass Marks : 30

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **any five** questions.*

1. *(a)* Differentiate between 2×5=10

   (i) DFS *vs* BFS

   (ii) Inductive *vs* deductive learning

   (iii) Tautology *vs* Contradiction

   (iv) Informed *vs* uninformed search

   (v) Universal *vs* existential quantifier.

(b) Define AI. Discuss the scope of AI. 2+8=10

2. (a) Explain the importance of predicate logic in AI. Express the following statements in predicate logic. 2+8=10

(i) There are 1500 students in CIT.

(ii) Some students play and some do not play.

(iii) Those who do not play do facebook.

(iv) Facebookers are lazy whereas players are not.

(b) Construct the truth tables for the following : 5+5=10

(i) $\sim(A \vee B)$

(ii) $\sim(A \wedge \sim B)$

3. (a) (i) What is a clause ? Define Horn clause. Also define CNF. 2+1+2=5

(ii) Convert the following expression into CNF. 5

$$(A \wedge B) \rightarrow (C \vee D)$$

(b) (i) What is the importance of resolution in a knowledge base ? Explain it with an example. 2+3=5

(ii) What is an interpretation ? Find all interpretations for $P \rightarrow Q$. 2+3=5

4. (a) What is the importance of alpha-beta pruning ? Explain alpha-beta pruning with a suitable example. 3+7=10

(b) Show the application of a heuristic function with a suitable example. 10

5. (a) What is hill-climbing search ? What are the problems arise during hill-climbing ? How these can be overcome ? 2+2+6=10

(b) Define A^* algorithm. What is its admissibility condition ? Show application of A^* to a suitable problem. 2+2+6=10

6. *(a)* What is learning automata ? Explain learning automaton model with a suitable example. 2+8=10

(b) What is meant by knowledge acquisition ? What are its sources ? Explain the concept of general learning model with a diagram. 2+2+6=10

7. Write short notes on : ***(any four)*** 5×4=20

(a) Inductive inference

(b) Neural network

(c) Minimax algorithm

(d) Iterative deepening search

(e) Propositional logic.
