

Code: AC74/AT74/AC123/AT123
Subject: ARTIFICIAL INTELLIGENCE & NEURAL NETWORKS
AMIETE – CS/IT (Current & New Scheme)

Time: 3 Hours**December - 2017****Max. Marks: 100**

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q. 1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

- a. Which is not the commonly used programming language for AI?
(A) PROLOG (B) Java
(C) LISP (D) Perl
- b. Which instruments are required for perceiving and acting upon the environment?
(A) Sensors and Actuators (B) Sensors
(C) Perceiver (D) None of these
- c. Zero sum game has to be a _____ game.
(A) Single player (B) Two player
(C) Multiplayer (D) Three player
- d. The complexity of minimax algorithm is
(A) Same as of DFS (B) Space – bm and time – bm
(C) Time – bm and space – bm (D) Same as BF
- e. Which of the following is an advantage of using an expert system development tool?
(A) Imposed structure (B) knowledge engineering assistance
(C) rapid prototyping (D) All of these
- f. The applications in the Strategic Computing Program include:
(A) Battle management (B) autonomous systems
(C) pilot's associate (D) All of these
- g. In LISP, the function evaluates <object> and assigns this value to the unevaluated <sconst>.
(A) (constant <sconst> <object>) (B) (defconstant <sconst> <object>)
(C) (eva <sconst> <object>) (D) (eva <object> <sconst>)
- h. Factors which affect the performance of learner system does not include
(A) Representation scheme used (B) Training scenario
(C) Learning algorithm (D) Good data structures
- i. Machine learning is
(A) The autonomous acquisition of knowledge through the use of computer programs
(B) The autonomous acquisition of knowledge through the use of manual programs
(C) The selective acquisition of knowledge through the use of computer programs
(D) The selective acquisition of knowledge through the use of manual programs

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- j. Different learning methods do not include
 (A) Memorization (B) Analogy
 (C) Deduction (D) Introduction

Answer any FIVE Questions out of EIGHT Questions.**Each question carries 16 marks.**

- Q.2** Write notes on
 (a) Semantic Networks (b) Frames (c) Knowledge Engineering (5+5+6)
- Q.3** Consider the following sentences:
 (i) John likes all kinds of food.
 (ii) Apple is food.
 (iii) Chicken is food.
 (iv) Anything anyone eats and is not killed by is food.
 (v) Bill eats peanuts and is still alive.
 (vi) Sue eats everything Bill eats.
- a. Translate these sentences into formulas in predicate logic. (8)
 b. Covert the formula of (a) into clausal form. (4)
 c. Prove that 'John likes peanuts' using resolution. (4)
- Q.4** a. Describe Forward & Backward chaining rule system using suitable examples in both categories. (8)
 b. With an example, explain the logics for non- monotonic reasoning. (8)
- Q.5** a. Describe Depth First Search algorithm and illustrate it with an example. Write its drawback also. (8)
 b. Explain heuristic search techniques briefly. Describe how it is applied in branch and-bound search procedure? (8)
- Q.6** a. Discuss the various types of learning algorithms based on their characteristics. (8)
 b. Highlight the role of Dempster and Shafer's theory of evidences in Artificial Intelligence. (8)
- Q.7** a. How do expert systems differ from conventional programs? (6)
 b. Explain inference mechanism in rule-based Expert System with the help of an example. (6)
 c. Discuss the following learning situations of Artificial Neural Networks:
 (i) Supervised (ii) Unsupervised Learning. (4)
- Q.8** a. Discuss advantages and disadvantages of Expert Systems? (8)
 b. Explain perceptron training algorithm. Give an example also. (8)
- Q.9** a. What are the applications of Artificial Intelligence? (8)
 b. State Turing test and explain its relevance in Artificial Intelligence. (8)