

BE2-R4 : ARTIFICIAL INTELLIGENCE AND NEURAL NETWORKS**NOTE :**

1. Answer question 1 and any FOUR from questions 2 to 7.
2. Parts of the same question should be answered together and in the same sequence.

Time : 3 Hours**Total Marks : 100**

1. (a) Explain Formal tasks, Mundane tasks and Expert tasks in Artificial Intelligence (AI).
 (b) Elaborate in brief : Hebb's rule (used for finding the weights of a neural network) and Delta rule (used to update the weights of a neural network).
 (c) What is Knowledge with respect to Artificial Intelligence (AI) ? Heuristic knowledge is one of the major types of knowledge. Enlist and explain in brief, the other types of Knowledge.
 (d) Describe a Production System in Artificial Intelligence (AI) by discussing various major components of AI production system and enlist the classes of the production system.
 (e) Explain the Fuzzy Entropy theorem.
 (f) "Self-learning" means that no programming is needed to make decisions or change the parameters. Justify the statement.
 (g) Represent the following simple facts in logic :
 Marcus is a man
 Plato is a man
 All men are mortal (7x4)
2. (a) Explain Artificial Neural Network in brief and draw a schematic diagram of it.
 (b) Show how constraint satisfaction can be used to solve this problem. Show first four steps.
 (i) S E N D
 (ii) + M O R E
 (iii) -----
 (iv) M O N E Y (9+9)
3. (a) "A* algorithm is admissible". Write a comment on this statement.
 (b) Artificial Intelligence (AI) requires periodic interaction between human and computer. This is one of the problem characteristic of AI. Enlist the others.
 (c) Mention in points about semantic nets and frames. (6+6+6)

4. (a) What do you mean by unification in PROLOG ? Explain with an example.
(b) There are mainly two strategies of an expert system which answers the question like “What can happen next ?” and “Why this happened ?” Consider the 2 strategies and then explain forward and backward chaining.
(c) Explain Dempster-Shafer Theory. (6+6+6)
5. (a) With a diagram, describe the general steps of Natural Language Processing starting from lexical analysis to pragmatic analysis.
(b) Explain Water Jug problem in detail. (9+9)
6. (a) What is Horn Clauses ? Explain with example.
(b) Write a PROLOG program to find factorial of given number.
(c) Differentiate between supervised learning and unsupervised learning. (6+6+6)
7. (a) Explain the method of hill climbing. Also, explain the problems associated with hill climbing with possible solution.
(b) Explain AO* Algorithm. (9+9)

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