

Registration No: -

--	--	--	--	--	--	--	--	--	--

Total Number of Pages: 02

B. Tech
RCS5D002

5th Semester Regular / Back Examination: 2021-22
ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Branch: ELECTRICAL & C.E,
ELECTRONICS & C.E / CSE, CST, IT

Max Marks: 100

Time: 3 Hours

Q Code: OF347

Answer Question No.1 (Part-I) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part-I

- Q1 Only Short Answer Type Questions (Answer All-10) (02×10)**
- a) Write down various properties of environment. (2)
 - b) Differentiate between the uninformed and informed search techniques. (2)
 - c) State the significance of using Heuristic functions. (2)
 - d) Write any four applications of Artificial Intelligence (2)
 - e) Define the term procedural knowledge. (2)
 - f) What is a Horn Clause? (2)
 - g) Define slot-filter knowledge representation in AI. (2)
 - h) What are the different kinds of planning? (2)
 - i) Differentiate between Forward and Backward chaining. (2)
 - j) State the meaning of Explanation-based Learning. (2)

Part-II

- Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (06×08)**
- a) Differentiate the DFS and BFS with their relative advantages and disadvantages. (6)
 - b) Define intelligent agent? Explain different types of intelligent agent. (6)
 - c) Explain various types of uncertainty and how these are can be handled? (6)
 - d) Write the steps for A* algorithm. (6)
 - e) Explain alpha-beta pruning with suitable example (6)
 - f) Why game playing was taken as an important concern by AI researchers? (6)
 - g) What do you mean by resolution and unification? Explain with an example. (6)
 - h) Define Knowledge representation? State the various properties for knowledge representation. (6)
 - i) Distinguish between Supervised learning and Unsupervised learning method. (6)
 - j) What are the main differences between scripts and frame structures? (6)
 - k) What is NLP? What are the various components of NLP? (6)
 - l) List the various components of a planning system. (6)

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four) (02×16)

- Q3** Explain the constraint satisfaction procedure to solve the following crypt arithmetic problem. (16)

B A S E
+ B A L L

G A M E S

What is hill climbing? Explain the problem associated with it and its solution.

- Q4** Represent the following sentences in FOPL (16)

- a) All birds fly.
- b) Every man respects his parent.
- c) Some boys play cricket.
- d) Not all students like both mathematics and science.
- e) Only one student failed in Mathematics.
- f) All my friends hate each other.
- g) Sachin is not only a good batsman but also a good bowler.
- h) Some used car dealers do not buy a used car for their family.

Q5 Explain genetic algorithm with different types of operations (16)

Let the population of chromosomes in genetic algorithm is represented in terms of binary number.

The strength of fitness of a chromosome in decimal form x , is given by $S f(x) = \frac{f(x)}{\sum f(x)}$ where $f(x) = x^2$. The population is given by $P = \{(01101, (11000), (01000), (10011)\}$. Calculate the strength of fitness of chromosome 11000.

Q6 Write short notes (16)

- a. Expert System
- b. Bayesian
- c. First order Logic
- d. Rote learning