(Please write your Exam Roll No.) Exam Roll No. .....

END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JUNE 2024

Paper Code: CIE-374/ECE-318/AI-302T **Subject: Artificial Intelligence**

Time: 3 Hours **Maximum Marks: 75**

Note: *Attempt five questions in all including Q.No.1 which is compulsory. Assume missing data. Select one question from each unit.*

Q1 Attempt **Any Five** parts. **(5×5=25)**

(a) How does Artificial Intelligence solves problems for which practically no feasible algorithm exists?

(b) How is an Expert-system different from other softwares like DBMS etc.?

(c) Discuss Best first search technique with the help of example.

(d) Define Artificial Intelligence. Discuss the area in which application of AI are used.

(e) Explain A* algorithm in AI.

(f) Describe N-queens problem with an example.

(g) What is the difference between knowledge representation and knowledge acquisition?

UNIT-I

Q2 (a) Explain the process to reach goal state of a search tree which is AND/OR graph. Give an example of application whose search tree is AND/OR graph. **(6)**

(b) Discuss and compare Blind search with Heuristic based search. Which one is better? Discuss with an example. **(6.5)**

Q3 (a) What is a State Space Search? Give any example of a Game which happens to be a problem of state space search and justify. **(6)**

(b) What is a Constraint Satisfaction Problem? Create a CSP from the real world and suggest some measures to solve it. **(6.5)**

UNIT-II

Q4 (a) Convert the following sentences into first order predicate logic: **(6)**
(i) Everyone likes Ram (ii) No one is perfect
(iii) Someone ate everything (iv) All basketball players are tall

(b) Write short notes on handling uncertainty using probabilistic reasoning. **(6.5)**

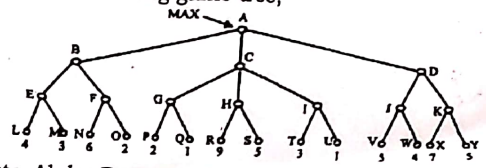
Q5 (a) Given the following text, "Everyone who enters a theatre has bought a ticket. Person who does not have money can't buy ticket. Gurpreet enters a theatre". Prove by resolution that "Gurpreet buys a ticket". **(6)**

(b) What is the difference between monotonic and non-monotonic reasoning in artificial intelligence? What is the future of non-monotonic reasoning in AI? **(6.5)**

P.T.O.

UNIT-III

Q6 (a) Consider the following game tree,



Execute Alpha-Beta pruning on the above game tree. How many terminal nodes are examined? For each cutoff specify whether it is an Alpha-cutoff or Beta-cutoff. **(6)**

(b) What are the various applications of Natural Language Processing and its important challenges? **(6.5)**

Q7 (a) Design a flowchart of genetic algorithm in game playing. **(6)**

(b) What are the differences between learning by analogy, inductive learning and explanation based learning? **(6.5)**

UNIT-IV

Q8 (a) Write short notes on Fuzzy logic. **(6)**

(b) What is machine learning? Discuss the issues in machine learning and the steps required for selecting right machine learning algorithm. **(6.5)**

Q9 (a) What are Bayesian networks in AI and how to solve them? **(6)**

(b) What is K-means clustering and the challenges associated with it? **(6.5)**

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