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

END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] JULY-2023

Paper Code: ETCS-310/312 ***Subject: Artificial Intelligence***

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

Note: Attempt five questions in all including.Qno.1 which is compulsory. Select one question from each unit.

Q1 Attempt **any Five** **(5x5=25)**

(a) What is an intelligent agent? Explain different categories of intelligent agents.
(b) Differentiate between uninformed and informed search algorithms.
(c) What is morpheme? What is its importance in the language?
(d) Explain Turing Test.
(e) Justify the need for computable functions and predicates in logic.
(f) Explain AI Techniques –search and abstraction.
(g) Explain Decision tree learning with example.

Unit – I

Q2 (a) What are the problems of Hill climbing? In what ways they can be dealt with? **(6)**

(b) Explain the Constraint Satisfaction algorithm. Trace the Constraint Satisfaction procedure solving the following crypto arithmetic problem. **(6.5)**

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  SOME
  TIME
 SPENT
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Q3 (a) Write and explain A* algorithm. Is A* algorithm guaranteed to find an optimal goal path if one exists? Explain by giving examples. **(6)**

(b) Solve the 8 puzzle problem using hill climbing. **(6.5)**

Start:

1	2	3
8	5	6
4	7	

Goal:

1	2	3
4	5	6
7	8	

Unit – II

Q4 (a) Explain the inference rules in propositional logic. Explain the rules to unify two predicates. **(6)**

(b) Assume that "Mr. Jane is neither hardworking nor intelligent". Using resolution to prove that Mr. Jane does not get a job. **(6.5)**

P.T.O.

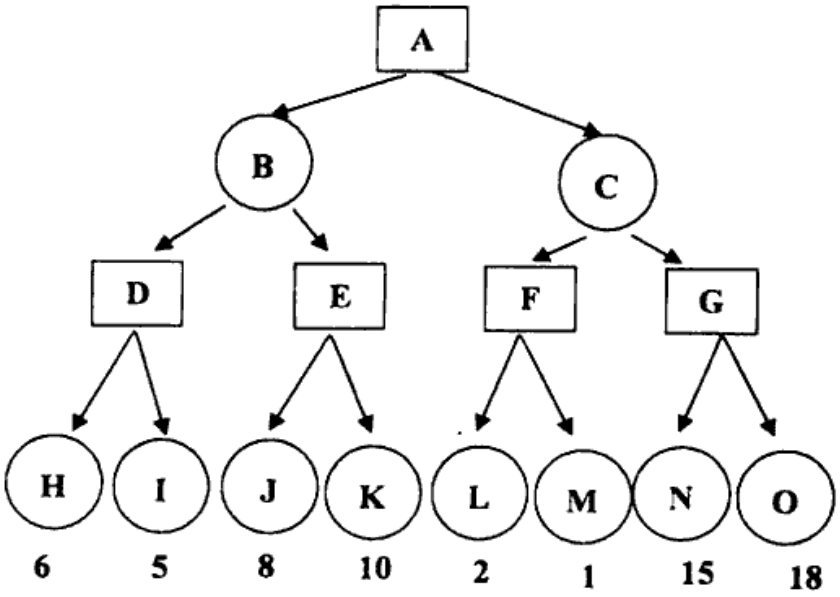
Q5 (a) Assume the following facts :- **(6)**

(i) Steve only likes easy courses.
(ii) Science course are hard
(iii) All the courses in the bioscience department are easy.
(iv) BE391 is a bioscience course.
Use resolution to answer the question, "What course would Steve like?

(b) Distinguish between Forward Chaining and backward chaining using examples. **(6.5)**

Unit – III

Q6 (a) Explain Minmax algorithm for game tree. Is the minimax procedure a depth-first or breadth first search procedure? Solve the following with alpha beta pruning. Explain each step. **(6)**



(b) What is an expert system? Describe various components of an expert system. Mention some advantages. **(6.5)**

Q7 (a) Explain Different methods of theorem proving. **(6)**

(b) Explain Natural Language processing (NLP) and its analysis techniques. Discuss some applications of NLP. **(6.5)**

Unit – IV

Q8 (a) What are the different applications of Artificial Intelligence? **(6)**

(b) Explain the learning process in Artificial Neural Networks (ANN) and Genetic Algorithms (GA). https://www.ggsipuonline.com **(6.5)**

Q9 (a) Explain inductive learning. How it is different from deductive learning. **(6)**

(b) What are the different applications of Artificial Intelligence? **(6.5)**

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