

Nirma University
Institute of Technology
Semester End Examination (IR), February - 2022
B. Tech. in Computer Engineering, Semester-VII
IT724 Artificial Intelligence

Time: 2 Hour

Max Marks: 50

Instructions: 1. Attempt all questions.
2. Figures to right indicate full marks.
3. Assume suitable information if required and mention it.

Q-1 Answer the following. [10]
A) Discuss all the issues in hill climbing with proper example. Write 05
CO1 down corrective measures to encounter them.

B) Suppose you design a machine to pass the turing test. What are the 05
CO3 capabilities such a machine must have?

Q-2 Answer the following. [10]
A) Discuss the significance of Production System and list its 06
CO2 constituents. Discuss the requirements of a good control strategy.

B) Write following sentences in clausal form :- 04
CO1 i) Jill likes anybody who likes to play cricket.
ii) Mansi is sure to carry an raincoat when it rains.
iv) All yellow mushrooms are poisonous.

Q-3 Answer the following. [10]
A) Consider the mutually exclusive hypothesis represented by a set 07
CO3

$U = \{\text{viral, measles, mumps, cough, conjunctivitis}\}$ in diagnostic system. Suppose we have measure of belief function 'm1' based on evidence of fever as m1 ($\{\text{viral, measles, mumps}\} = 0.85$ and 'm2' function based on evidences of fever and headache, respectively; also, m2 ($\{\text{viral, conjunctivitis}\} = 0.6$. Combine the given belief functions to generate an m3 function using Demster's rule.

OR

A) Discuss means ends analysis problem solving technique with 07
CO2 suitable example.

B) Discuss how FOPL(First order predicate logic) is powerful than 03
CO2 propositional logic?

Q-4 Answer the following. [10]

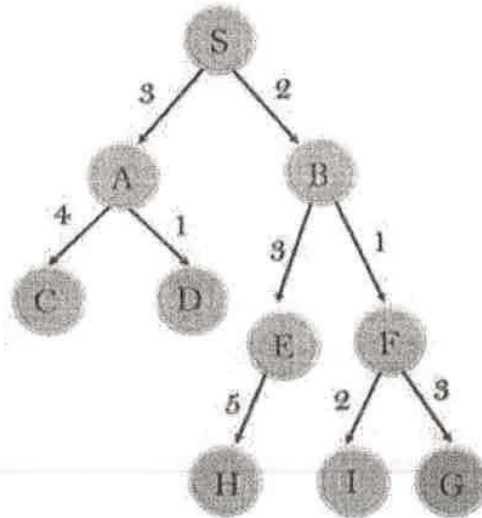
A) Write a program in PROLOG to generate all permutations of a given 04
CO3 list.

B) Solve the following crypt arithmetic problem step-by-step: 06
CO2

LOGIC + LOGIC = PROLOG

OR

B) Consider the following search space. In this state space S is the 06
CO2 starting state. The values Given in table are heuristic values of that respective state. The value written on arrow is the cost of moving from one state to another state. Trace A* algorithm and find out optimal path. Clearly maintain open and closed queue.



node	H (n)
A	12
B	4
C	7
D	3
E	8
F	2
H	4
I	9
S	13
G	0

Q-5 Answer the following. [10]

A) Define the problem reduction search. Name the algorithm used for 05
CO3 this strategy and discuss its issues with example.

- B) Use Alpha-Beta pruning to compute the mini-max value at each node for the game tree below, assuming children are visited left to right. Show the alpha and beta values at each node. Show which branches are pruned. 05
CO3

