

2019

MSc

4th Semester Examination

COMPUTER SCIENCE

PAPER – COS-402(M1)

Full Marks : 25

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

Candidates are required to give their answers in their
Own words as far as practicable.

Illustrate the answers wherever necessary.

Q1. Convert the following English sentences into corresponding predicate logic (**Any Two**).

i) Not every integer is even.

ii) Some integers are even and some are odd.

iii) A number is even only if it is integer.

iv) If an integer is not odd, then it is even.

2x2=4

Q2. Answer **Any Two** questions.

2x4=8

i) What are quantifiers? Explain each quantifier with proper example.

4

ii) What are heuristic functions? What are the disadvantages of undervalued and overvalued heuristic function?

4

iii) Write the truth table for following expression

$$AB + BC \rightarrow CA + B$$

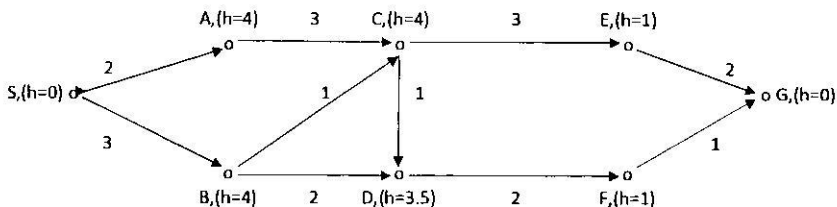
4

iv) What are the criteria by which we can judge any search algorithm? Explain each of them shortly.

4

Q3. Answer any **ONE** question.

i) Suppose we want to use the A* algorithm on the graph below to find the shortest path from node S to node G. Each node is labeled by a capital letter and the value of a heuristic function. Each edge is labeled by the cost to traverse the edge.



Perform A* algorithm on the graph and show the resultant path.

8

ii) Consider the problem,

Your are on the bank of a river with a boat, a cabbage, a goat, a wolf. Your task is to get everything to the other side.

Restrictions:

1. Only you can handle the boat.
2. When you're in the boat, there is only space for one more item
3. You can't leave the goat alone with the wolf, nor with the cabbage (or something will be eaten).

Solve the problem using uniform cost search with unit coast for each edge.

8

(Internal Assessment : 05)