

2022

M.Sc.

4th Semester Examination

COMPUTER SCIENCE

PAPER—COS—401

ARTIFICIAL INTELLIGENCE

Full Marks : 50

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.

1. Answer any four questions : 4×2

(a) What is exhaustive search?

(b) What are heuristics?

(Turn Over)

- (c) Distinguish between fact and predicate.
- (d) What is state space search?
- (e) Define existential quantifier and universal quantifier.
- (f) What are the criteria by which we can compare among different search algorithm?
2. Answer any *four* questions. 4×4
- (a) Explain the effect of overestimation and underestimation of heuristics in A* algorithm. 4
- (b) Express the following facts in clause form 1+1+2
- i) Blondes have more fun.
- ii) All men are created equal.
- iii) You always hurt the one you love.
- (c) What are alpha-beta cutoff? Explain with example. 4

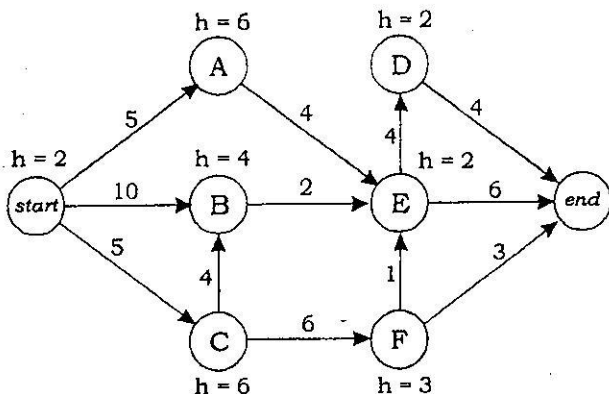
(d) Explain simulated annealing in detail. 4

(e) What are the drawbacks of breadth first search?
How it can be removed? 4

(f) Prove De Morgan's Law using truth table. 4

3. Answer any *two* questions : 2×8

(a) Apply A* on the following graph and show the solution path and path cost. 6+2



(b) Prove that A* is admissible. 8

- (c) Determine whether the following is satisfiable, contradictory or valid. $(P \wedge Q) \vee \neg (P \wedge Q)$. 8
- (d) Explain state space approach in solving any AI problem. Discuss this for water jug problem. 8

[Internal assessment - 10]
