

Time: 3 Hours

Marks: 80

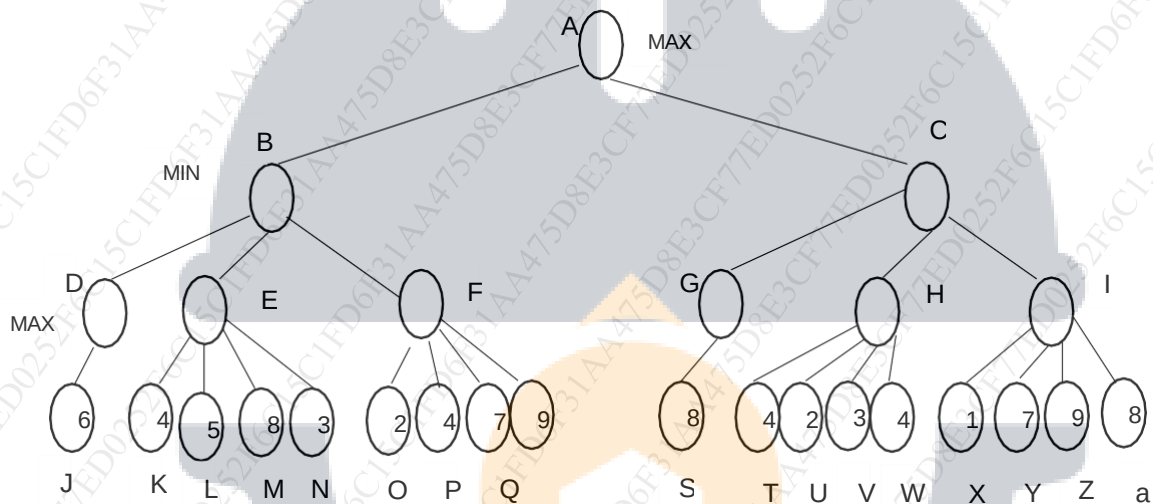
- 1) Q.1 is compulsory
- 2) Attempt any **three** from remaining **five** questions

Q1) Solve any four of the following:

- a) Describe different categories of AI [5]
- b) Describe the characteristics of a medical diagnosis system using the PEAS properties [5]
- c) Explain Goal based Agent with a block diagram [5]
- d) Compare and contrast propositional logic and first order logic [5]
- e) What do you mean by hill climbing. Explain. [5]

Q2)

- a) Perform α - β pruning on the following graph, clearly indicating the α and β cuts and the final value of root node. [10]



- b) What do you understand by informed and uninformed search methods? Explain in detail with example. [10]

Q3)

- a) Consider the following statements: [10]

- a) All people who are earning are happy
- b) All happy people smile
- c) Someone is earning

Perform the following tasks:

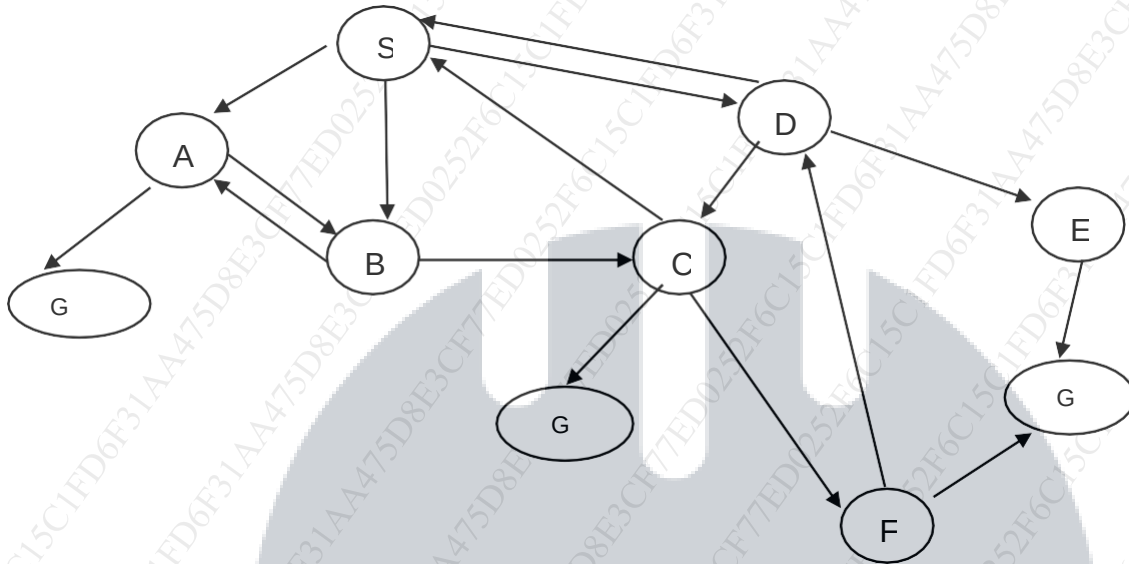
- i) Represent above statements in FOL
- ii) Convert each to CNF
- iii) Prove that someone is smiling using resolution technique. Draw the resolution tree

- b) What do you understand by forward chaining and backward chaining. Explain in detail

[10]

Q.4

a) For the given graph, the table below indicates the path costs and the heuristic values. S is the start node and G1, G2 and G3 are the goal nodes. Perform A* search to find the shortest distance path from S to any of the goal nodes. [10]



Edge	Cost	Edge	Cost	Edge	Cost
SA	5	BA	2	DS	1
SB	9	BC	1	DC	2
SD	6	CS	6	DE	2
AB	3	CG2	5	EG3	7
AG1	9	CF	7	FD	2
				FG3	8
Node	Heuristic	Node	Heuristic	Node	Heuristic
S	5	D	6	G1	0
A	7	E	5	G2	0
B	3	F	6	G3	0
C	4				

b) What is planning in AI? Discuss partial order planning and hierarchical planning in detail [10]

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Q 5)

- a) Explain the concept of genetic programming [10]
- b) What is formulation of a problem. Formulate the Wumpus world problem in terms of following components: initial state, actions, successor function, goal test, path cost. [10]

Q.6 Write short notes on :

[20]

- a) Applications of AI
- b) Simulated annealing

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