K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

May-June 2024
B.Tech Program: Computer Engineering Scheme: I/II/IIB/: II
Regular Examination: TY Semester: VI
Course Code: CSE604 **Course Name: Artificial Intelligence**
Date of Exam: 27/05/24 Duration: 2.5 Hours Max. Marks: 60

Instructions:
(1) All questions are compulsory.
(2) Draw neat diagrams wherever applicable.
(3) Assume suitable data, if necessary.

		Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight:**	**12**		
i)	Define Rationality and Rational agent.	2	CO2	R
ii)	Define any four types of task environments.	2	CO2	R
iii)	Enlist any five applications of AI.	2	CO1	R
iv)	What is Uncertainty?	2	CO4	R
v)	What are the problems that occur in Hill climbing technique?	2	CO3	R
vi)	Derive a hierarchical plan for planning a trip to goa.	2	CO5	U
vii)	How AI is useful in daily life? Associate it to real life by giving any 2 suitable examples.	2	CO6	Ap
viii)	Explain unification in brief with syntax.	2	CO4	U
Q.2	**Solve any four questions out of six.**	**16**		
i)	Explain Cognitive Modeling Approach in detail.	4	CO1	U
ii)	What is PEAS? Identify the PEAS descriptor of self-driven car.	4	CO2	Ap
iii)	Explain following informed search algorithms based on performance measures with justification: Complete, Optimal, Time complexity, Space complexity. (a) Greedy best first search (b) A*	4	CO3	U
iv)	Explain forward chaining with example.	4	CO4	U
v)	Explain Reinforcement learning with example.	4	CO5	U

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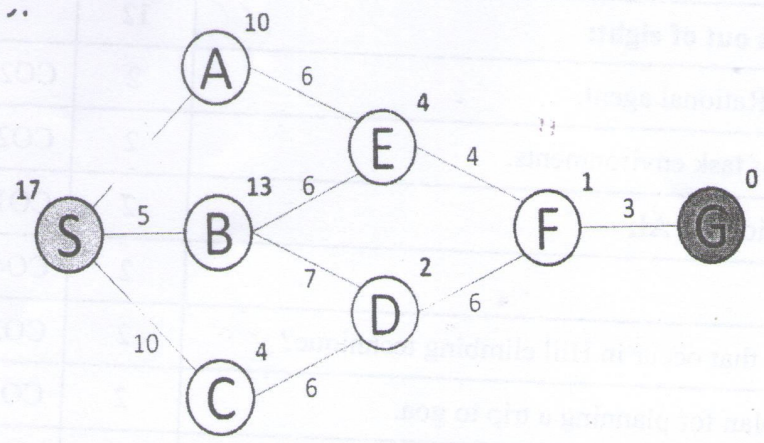
vi)	Explain the role of Artificial Intelligence in Healthcare.	4	CO6	U
Q.3	**Solve any two questions out of three.**	**16**		
i)	Apply A* algorithm on the figure shown below. Find the path from initial state to goal states. **S** is a start state and **G** is a goal state. 	8	CO3	Ap
ii)	Consider the following axioms: All people who are graduating are happy. All happy people smile. John is graduating. i. Represent these axioms in First order predicate logic. (2M) ii. Convert each to CNF. (3M) iii. Prove that "Is John Smiling?" using resolution technique. Draw the resolution tree. (3M) iv.	8	CO4	Ap
iii)	Explain partial order planning with suitable example.	8	CO5	U
Q.4	**Solve any two questions out of three.**	**16**		
i)	What are the basic building blocks of Learning Agent? Explain each of them with a neat block diagram.	8	CO2	U

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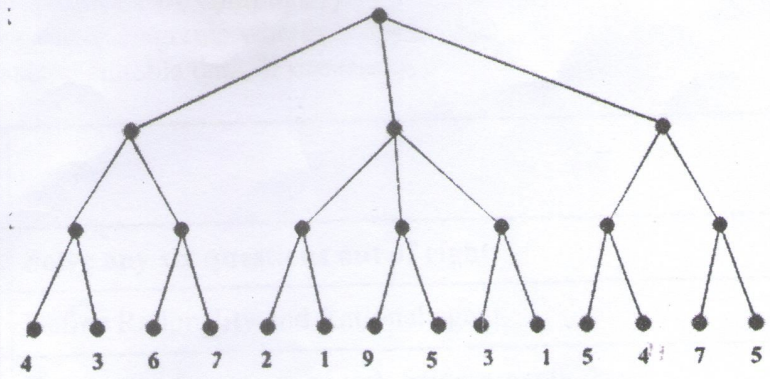
ii)	Apply Alpha beta pruning on given example 	8	CO3	Ap
iii)	Explain the architecture of Expert System with neat labeled diagram.	8	CO6	U

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