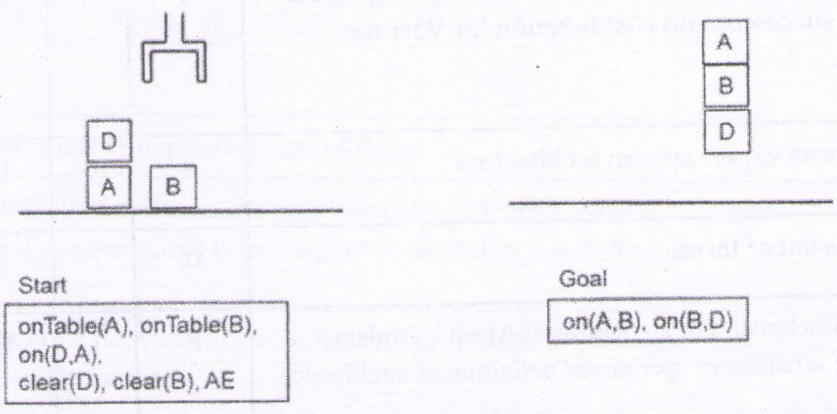
K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

April – May 2023
(B.Tech) Program: Computer Engineering Scheme I/II: II
Examination: TY Semester: VI
Course Code: CEC604 and Course Name: Artificial Intelligence

Date of Exam: 19/5/2023 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)	What is intelligence? How do you measure it?	2	1	U
ii)	Differentiate uninformed and informed search strategies. Which one is better and why?	2	2	An
iii)	What are the limitations of Hill Climbing?	2	3	U
iv)	Why is First order Logic not able to address uncertainty? Give any two reasons	2	4	U
v)	List down any five applications of AI in medical and education domain.	2	6	U
vi)	Define Problem Formulation. For the planning problem depicted in the below figure, what are the flaws present in the initial plan ? 	2	3	A

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vii)	Describe in brief conditional planning	2	5	U
viii)	What is unification?	2	4	U
Q.2	**Solve any four questions out of six.**	**16**		
i)	What is PEAS? Why is it important? Describe PEAS descriptors for automated taxi driver system.	4	2	An
ii)	Convert the following facts into FOPL **1. Marcus was a man.** **2. Marcus was a Pompeian.** **3. All Pompeians were Romans.** **4. Caesar was a ruler.** **5. All Pompeians were either loyal to Caesar or hated him.** **6. Everyone is loyal to someone.** **7. People only try to assassinate rulers they are not loyal to.** **8. Marcus tried to assassinate Caesar.**	4	4	A
iii)	Describe partial Order Planning. Give a suitable example.	4	5	A
iv)	Define AI and justify thinking rationally (Laws of thought) approach.	4	1	An
v)	Describe and apply the steps of Problem formulation and give the initial state, goal test, successor and cost function for Vacuum Cleaner Agent.	4	3	A
vi)	Draw and explain in brief expert system architecture	4	6	U
Q.3	**Solve any two questions out of three.**	**16**		
i)	What are the various characteristics of an Intelligent Agent? Explain Turing Test designed for satisfactory operational definition of intelligence.	8	1	An

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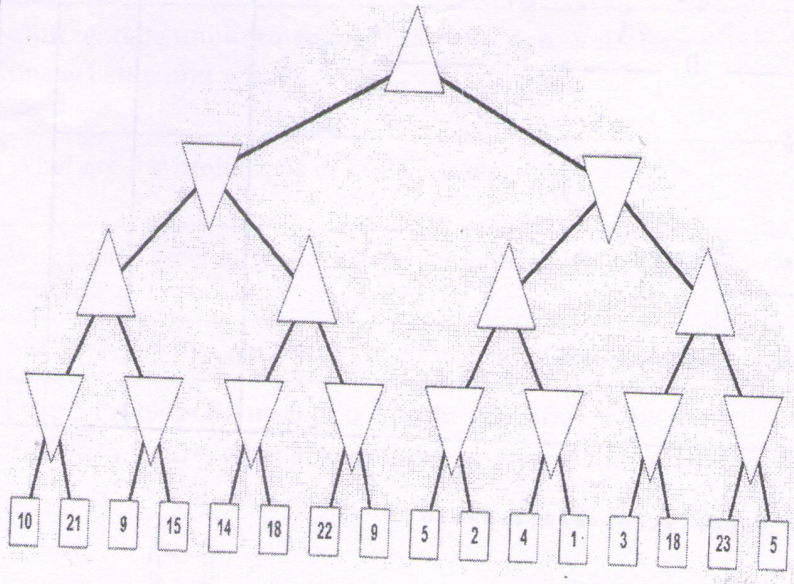
ii)	Consider the following sentences: 1. John likes all kind of food. 2. Apple and vegetable are food 3. Anything anyone eats and not killed is food. 4. Anil eats peanuts and still alive 5. Harry eats everything that Anil eats. Prove by the resolution that: **John likes peanuts**	8	4	A
iii)	Apply alpha-beta pruning on example given below, consider the first node as max. 	8	3	A
Q.4	**Solve any two questions out of three.**	16		
i)	Draw and describe the architecture of a learning agent. Compare and contrast Goal based Agent with Utility based Agent.	8	2	An
ii)	Describe Active and Passive Reinforcement Learning with a suitable example for each.	**8**	5	U

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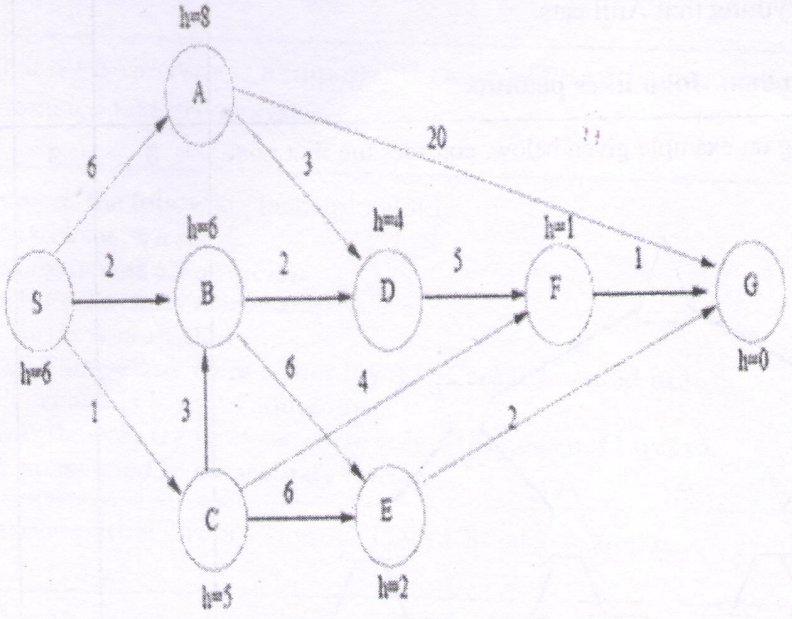
iii)	Consider the graph given below. Assume that the initial state is S and the goal is G . Show how A* Search would create a search tree to find a path from the initial state to the goal state: At each step of the search algorithm, show which node is being expanded and the content of fringe(OPEN).Report the solution cost. 	**8**	3	A

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