END SEMESTER EXAMINATION, MAY 2023
S.T. SEMESTER IV (CBCGS-HME 2020)
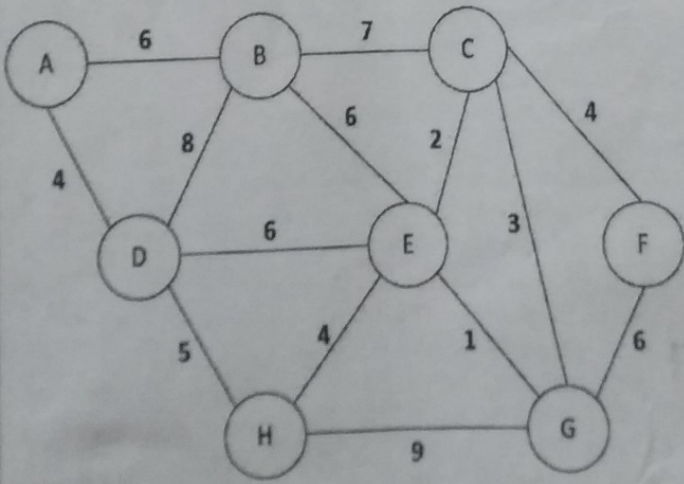
Branch:	Artificial Intelligence & Data Science	Q.P. Code:	T2415005-2
Subject:	Introduction to Artificial Intelligence	Duration:	2 hours
Subject Code:	PCC-AIDS404	Max. Marks:	60

Instructions:
1. All sections are compulsory
2. Figures to the right indicate full marks.
3. Assume suitable data if necessary and state the assumptions clearly.

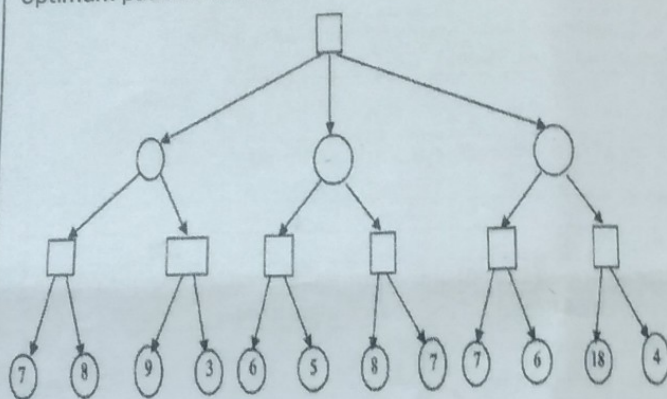| Section-I	Short Answer Questions (Answer any 05 questions out of 06) (Fundamental, Core Types)				(10 Marks)
Q. No.	Answer the following.	Marks	CO	RBT Level	PI
1	Explain the representation of CSP. Write 2 real world example of CSP.	2	3	U	1.3.1
2	Explain Horizon Effect.	2	3	R	1.1.1
3	Write short note on Strong AI	2	4	R	1.1.1
4	Differentiate between Uninformed Search and Informed Search	2	2	U	1.3.1
5	Write performance measures of Breadth First Search algorithm	2	1	U	1.3.1
6	Represent the following statements using FOL. 1. Everyone who sees Mary loves Mary 2. Every boy who loves Mary hates every other boy who Mary loves.	2	5	U	1.3.1

Section-II	Descriptive Answer Questions(Answer any 04 out of 06) (Descriptive, Comprehension Types)				(20 Marks)
1	Compute the minimum cost required to reach from node "A" to node "G" by using UCS search technique.	5	2	U	1.3.1

2	Solve the given graph by using DFS traversing technique by considering starting node as "D"	5	5	A	2.1.3

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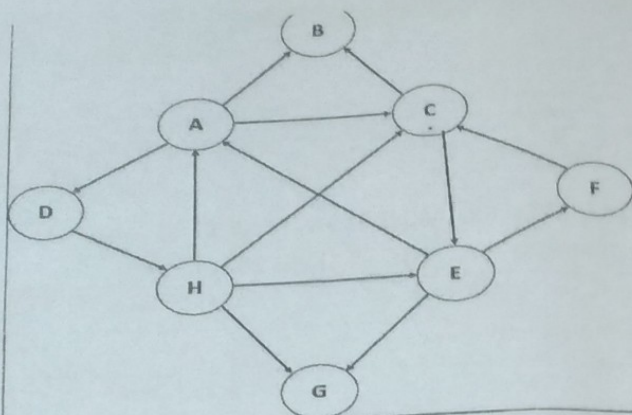
3	Write PEAS for Vacuum Cleaner	5	1	U	1.3.1
4	Solve the given tree by using Alpha – beta Pruning and find the optimum path for the same.	5	4	A	2.1.3

5	Explain types of Hill Climb search algorithm.	5	3	A	2.1.3
6	Solve using cryptarithmetic: SOME + TIME = SPENT	5	4	A	2.1.3

Section-III	Long Answer Question (Answer any 03 out of 05) (Application, Analytical, Evaluation, Design Type)	(30 Marks)			
1	The law says that it is a crime for an American to sell weapons to hostile nations. The country Nono, an enemy of America, has some missiles, and all of its missiles were sold to it by Colonel West, who is American. **Exercise: Formulate this knowledge in FOL using Forward chaining and backward chaining**	10	3	AN	3.1.1
2	Draw and describe the architecture of Utility based agent. How is it different from Model based agent?	10	1	A	2.1.3
3	Explain resolution by Refutation with suitable example.	10	5	A	2.1.3
4	Describe each component in the architecture of Expert System? What are the limitations of an Expert System?	10	6	AN	3.1.1
5	Explain Unification algorithm. For each pair of the following atomic sentences find the most general unifier (If exist) a) Find the MGU of {p(f(a), g(Y)) and p(X, X)} b) Find the MGU of {p(b, X, f(g(Z))) and p(Z, f(Y), f(Y))} c) Find the MGU of {p (X, X), and p (Z, f(Z))} d) Find the MGU of UNIFY(prime (11), prime(y)) e) UNIFY(knows(Richard, x), knows(Richard, John))	10	2	A	2.1.3

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