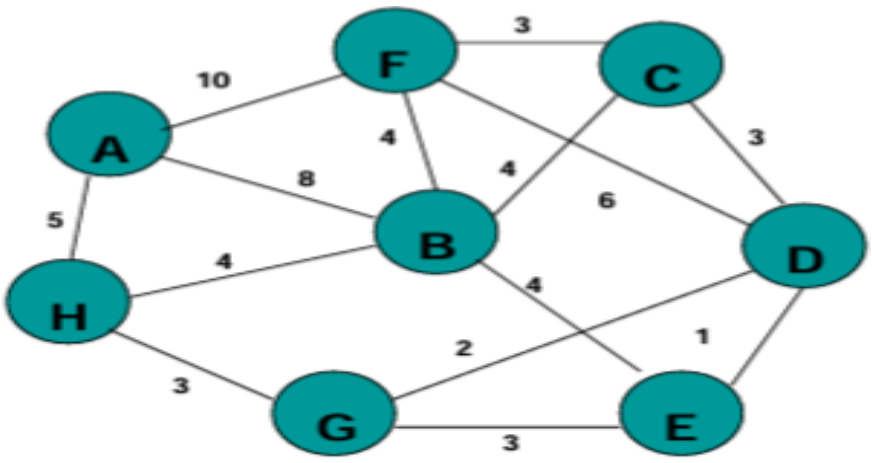
Name. _____ Student Admn. No.: _____				**Printed Pages:01**
School of Computer Science & Engineering **Summer Term Examination – July - August 2024** **[Programme: B.Tech/M.Tech] [Semester: IV] [Batch: Summer Term]**				
Course Title: Analysis And Design Of Algorithms **Course Code: R1UC404B / BCSE3031 / BTCS2402 /E2PV101T/E2UC403B**				**Max Marks: 100** **Time: 3 Hrs.**
Instructions:	*1. All questions are compulsory.* *2. Assume missing data suitably, if any.*			
		K Level	COs	Marks
SECTION-A (15 Marks)		**5 Marks each**		
1.	Explain graph coloring. What is chromatic number?	K1	4	5
2.	Illustrate the general method of divide and conquer technique.	K2	5	5
3.	Define Travelling salesman problem. List out the different problem solving approaches, in which this problem can be solved.	K1	2,5	5
SECTION-B (40 Marks)		**10 Marks each**		
4.	Find the solution of the following recurrence relation : (any one) (i) $T(n) = 2\,T(n/2) + n$ (ii) $T(n) = 3\,T(n/4) + n^2$	K2	1	10
5.	Sort the following elements using quick sort : 54, 26, 93, 17, 77, 31, 44, 55, 20	K4	4	10
6.	Write the problem statement of knapsack problem. Define 0/1 knapsack and fractional knapsack. Elaborate fractional knapsack in detail.	K3	5	10
7.	Compare Binary search to linear search. What is the working procedure of Binary search? Derive its time complexity.	K3	4	10
SECTION-C (45 Marks)		**15 Marks each**		
8.	Analyze the time complexity of Strassen's matrix multiplication to conventional matrix multiplication.	K4	2,3	15
9	Find the cost of minimum spanning tree of the following graph : 	K5	4,5	15
10	Define LCS (Longest Common SubSequence) problem. How it can be solved using Dynamic Programming. Find the LCS of the following 2 strings: **String 1**: stone **Sting 2** : longest	K5	5	15