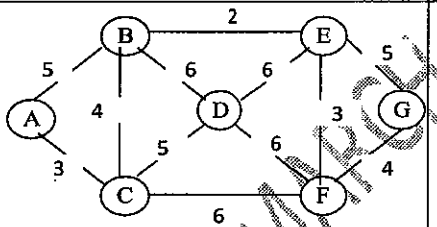
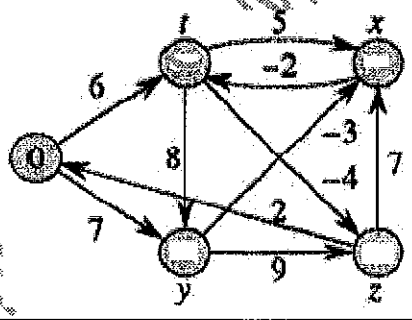
JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATIONS- 2026
B.Tech-IV Semester (CSE/IT)

COURSE CODE (CREDITS): 25B11CI412 MAX MARKS: 25

COURSE NAME: Design and Analysis of Algorithms

COURSE INSTRUCTOR: Dr. (Amit, Amol, Arvind, Ravi) Mr. Saurav MAX. TIME: 1:30 Hrs

Note: *(a) All questions are compulsory.*
(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems
(c) Use of calculator is not allowed

Q.No	Question	CO	Marks
Q1	Construct the minimum spanning tree for the graph given here using Kruskal's Algorithm. Also, identify the sequence of edges added to the minimum spanning tree with complexity. 	3	5
Q2	Find the shortest path with a suitable algorithm (mention the reason) and analyze the time complexity of the used algorithm. 	3	5
Q3	Mention the importance of variable length encoding over fixed length encoding with a small example. Generate a Huffman tree of the following Frequency Table and find the average bits per character: Characters: A B C D E F G Frequency: 25 20 14 14 10 9 8	3	5
Q4	Find the maximum profit using Greedy approach to solve the fractional knapsack with capacity 12. Weight 1 3 5 6 Profit 8 6 5 10	4	5
Q5	Given a schedule containing the arrival and departure time of trains at a station, your task is to find the minimum number of platforms needed to avoid delay in any train's arrival. Trains arrival = {2.00, 2.10, 3.00, 3.20, 3.50, 5.00} Trains departure = {2.30, 3.40, 3.20, 4.30, 4.00, 5.20} Write a greedy algorithm/procedure to find the minimum number of platforms needed to avoid delay in any train's arrival. Perform the time complexity analysis of your greedy algorithm by considering *'n'* trains.	4	5