Total No. of Printed Pages: 2

PRN No.			PAPER CODE	HLE65795

May 2024 (ENDSEM) EXAM

SY /TY/B.TECH (SEMESTER - II)

COURSE NAME: **Branch: All Branch** **COURSE CODE:** UBCA7689

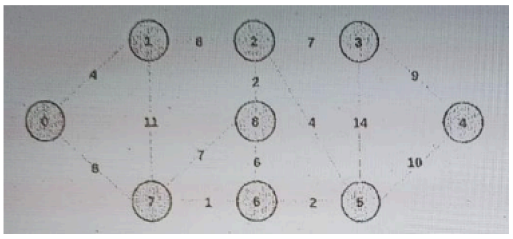
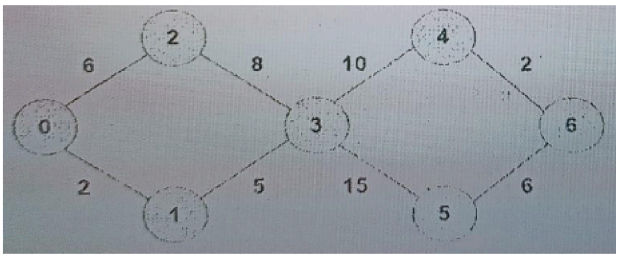
(PATTERN 2020)

Time: [1Hr 30 Min] **[Max. Marks: 40]**

(*) Instructions to candidates:

- **Figures to the right indicate full marks. Use of scientific calculator is allowed**
- **Use suitable data wherever required**
- **All questions are compulsory. Solve any one sub question each from Questions 1 and 2 and solve any three sub questions each from Q.3 and Q.4**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q1	a) Contrast the benefits and drawbacks of using a monolithic kernel versus a microkernel in operating system design.	[5]		4
	b) You are setting up a secure Wi-Fi network for a campus environment. Explain how you would apply network segmentation and VLAN configuration to isolate user traffic and protect sensitive data.	[5]		3
Q2	a) Assess the effectiveness of a data masking solution in protecting sensitive data during development and testing.	[5]		5
	b) Judge the reliability of a network slicing framework in enabling network virtualization and service customization for different applications.	[5]		5
Q3	a) Design a comprehensive framework for integrating artificial intelligence and machine learning algorithms into telecommunications networks for predictive maintenance and optimization.	[5]		6
	b) Recall the syntax for defining a concrete mix design?			1
	c) Examine and construct MST using Prim's Algorithm. Assume the following graph as an example for which we need to find the Minimum Spanning Tree (MST).	[5]		4

	 d) Explain the concept of containerization (e.g., Docker, Kubernetes) and its advantages in software deployment and management.	[5] [5]		2
Q4	a) Identify the shortest path from Node 0 to all other Nodes in the following graph using Dijkstra's Algorithm. Find shortest paths from node 0 to node 6, node 0 to node 4 and node 2 to node 6.  b) Judge the reliability of a security information and event management (SIEM) system in detecting and responding to cybersecurity incidents. c) Plan a sustainable transportation system for a city that integrates public transit, cycling infrastructure, and electric vehicle charging stations to reduce traffic congestion and emissions. d) Debate the ethical implications of using AI algorithms for predictive policing and crime prevention.	[5] [5] [5] [5]		4 5 6 5