SOMAIYA
VIDYAVIHAR UNIVERSITY

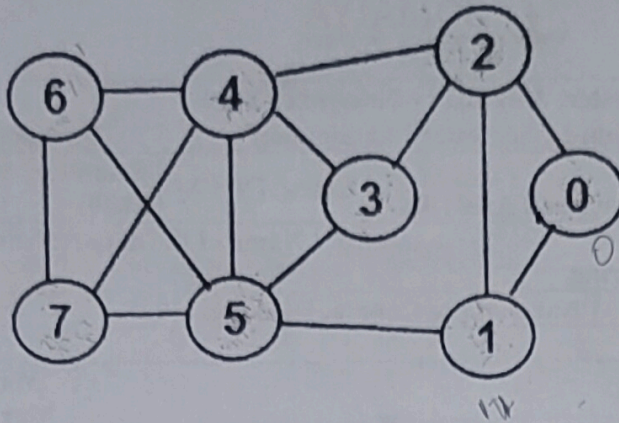|			
Semester: July 2024 – November 2024			
Maximum Marks:30	**Examination: In-Semester Examination**		Duration :1hr15min
Programme code: H54		Class: TY	Semester: V (SVU 2020)
Programme: Honors in Data Science and Analytics			
Name of the Constituent College: K. J. Somaiya College of Engineering		Name of the department: EXCP/COMP	
Course Code: 116h54C501		Name of the Course: Data Analytics	

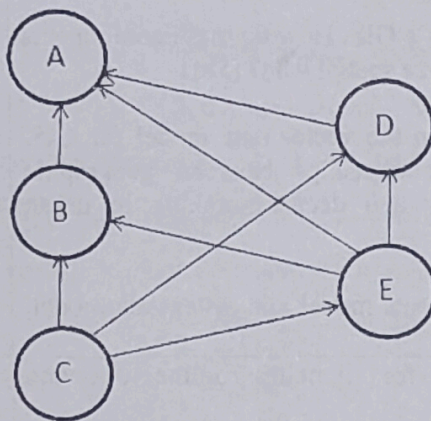| Question No.		Max. Marks	BT Level
Q1	a) Describe descriptive analytics. What are its primary goals and methods, and how does it help in understanding past data? Provide an example of how descriptive analytics can be used.(5M)	10	UN
	b) Evaluate the impact of predictive analytics on decision-making in the healthcare industry. Illustrate with examples of how predictive analytics can transform patient treatment plans and hospital operations.(5M)		UN
	OR		
	a) Compare diagnostic and prescriptive analytics applied to real world OTT platforms like Netflix.		
	b) A company uses descriptive analytics to summarize its sales data over the past year. They want to calculate the following metrics: mean, median, mode, interquartile range and standard deviation of monthly sales. The sales data (in thousands) for the 12 months is as follows: 120, 150, 180, 200, 230, 250, 300, 280, 240, 220, 200, 190. Calculate above metrics and explain how each one provides different insights into business performance. (5M)		UN
			AP
Q2	**Attempt ANY TWO**	10	UN
	a) Explain the main components of a GIS. How do these components work together to manage and analyze spatial data? (5M)		
	b) Analyze the role of topology in the vector data model for GIS. Discuss how the topological relationships between geographic features enhance spatial analysis and decision-making in urban planning.(5M)		AN
			UN
	c) Explain the elements of vector data model and raster data model. (5M)		
Q3	Calculate Betweenness Centrality for all nodes for the following social graph: (10M)	10	AP

OR

a) Explain how the Laplacian matrix of a social graph can be used for performing graph analytics and obtaining insights. Find the Laplacian matrix for the following directed graph. (5M)
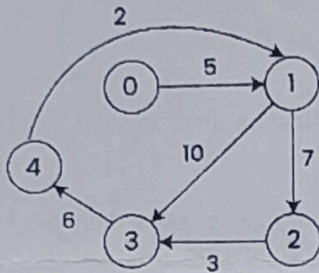
b) Explain Graph connectivity analytics. Find the terminal node, unreachable node, hub node and authority node. (5M)