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ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, MAY 2025

COMMON TO ALL BRANCHES
Semester VI
CSM509 DATA VISUALIZATION
(Regulation 2019)

Time:3hrs Max.Marks: 100

CO1	To understand the fundamentals of data visualization.
CO2	To know the working principles of various information visualization depth tools.
CO3	To acquire knowledge about the issues in data representation.
CO4	To visualize the Data using tools & Tableau.
CO5	To gain skill in designing real time interactive information visualization system.

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (10x2=20Marks)
(Answer all Questions)

Q. No.	Questions	Marks	CO	BL
1	List the basic datatypes in JavaScript.	2	1	1
2	How can you apply a specific style to all <p> tags inside a using CSS?	2	1	3
3	Write a JavaScript snippet that changes the background color of a web page when a user clicks a button.	2	2	3
4	Explain domain and range in scale function with example.	2	2	2
5	Define parsing and explain its role in handling data.	2	3	2
6	Compare space-filling and non-space-filling visualizations for trees.	2	3	4
7	What role does .enter() play in D3's data binding process? Explain with example.	2	4	3
8	Using D3.js, create an SVG with a single rectangle of width 100 and height 60. Position it at coordinates (100, 50).	2	4	3
9	Why is interactivity important in data visualizations? Mention two types of interactions that improve user experience.	2	5	2
10	State any two real-world scenarios where a scatter plot is preferred over a bar chart for visualization.	2	5	4

PART- B (5x 13=65Marks)

Q. No.	Questions	Marks	CO	BL
11 (a)	(i) Explain CSS selectors in detail and show the different ways of selecting elements with appropriate example. (ii) Write a JavaScript code snippet to change an image when a button is clicked.	8+5	1	3
	OR			
11 (b)	Read the time series data from a .csv file containing monthly revenue from car sales and write JavaScript code to visualize the values in time series scale.	13	1	3
12 (a)	Describe different types of visualizations used for Trees and Graphs. Illustrate their structure and use cases with appropriate examples.	13	2	3

	OR			
12 (b)	Write a program to create a force-directed graph with draggable nodes.	**13**	2	3
13 (a)	Explain the different types of text-based data representation formats. Describe how each format is used in real-world applications and when it is most appropriate to use each one.	**13**	3	3
	OR			
b)	(i) Write a code snippet to visualize the x-axis of a chart and move it to correct position. (ii) Compare the different ways of including styles and script in the html file.	**5+8**	3	3
14 (a)	(i) Write a JavaScript program using D3.js to create a bar chart from an initial dataset. Modify the code to dynamically add a new bar to the chart each time the user clicks on the page. (ii) Evaluate how D3's transition functions can be applied to animate the addition of new bars in a bar chart.	**8+5**	4	4
	OR			
14 (b)	Assume you have two files: • India.json • Population.csv Write a D3 script to create a Choropleth to visualize the state-wise population.	**13**	4	4
15 (a)	Explain the process to create an interactive scatterplot with the following features: • Highlight a data point on hover by changing its color and size • Tooltip display on hover	**13**	5	3
	OR			
15 (b)	Write a javascript code to display a barchart with text labels from an array of numbers. Include a button to sort the chart on click.	**13**	5	3

PART- C (1x 15=15Marks)

(Q.No.16 is compulsory)

Q. No.	Questions	Marks	CO	BL
16.	(i) Given the following sample dataset containing issues such as inconsistent scales and missing values, identify the most suitable D3 visualization to represent the data effectively. Justify your choice and write the code to implement the visualization.	**10+5**	3	6

Country	Population (millions)	GDP (billion USD)	Region
India	1390	2875	Asia
USA	331	21430	North America
China	1441	14300	Asia
Germany	83	3845	Europe
Brazil	213	1445	South America
Unknown	-	900	Unknown
Nigeria	206	-	Africa
Australia	26	1390	Oceania

(ii) Discuss the different types of shapes that can be drawn with SVG.