Q.6		Attempt any two:						
	i.	Describe how marks and channels are encoded in D3.js. Provide examples of how this encoding enhances data representation.	**5**	3	5	3	4
	ii.	Compare and contrast the use of vertical and horizontal bar charts. What are the specific use cases for each type in data visualization?	**5**	3	10	3	4
	iii.	Discuss common visualization idioms such as bar charts, line charts, and pie charts. How does D3.js facilitate the implementation of these idioms?	**5**	3	5	3	3

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Total No. of Questions: 6 *Total No. of Printed Pages:4*

Enrollment No.....

Faculty of Engineering
End Sem Examination Dec 2024
CS3ED10 Data Visualization

Programme: B.Tech. Branch/Specialisation: CSE All

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	**BL**	**PO**	**CO**	**PSO**
Q.1	i.	Which of the following is NOT a basic principle of data visualization? (a) Mapping data onto aesthetics (b) Adding irrelevant data (c) Using coordinate systems and axes (d) Creating statistical graphics	**1**	1	1	1	1
	ii.	Time series data graphics are best used for visualizing- (a) Categories (b) Continuous data over time (c) Geographic locations (d) Textual data	**1**	2	2	2	2
	iii.	Fisheye views are used in computer visualization to- (a) Simplify information (b) Enhance 2D data (c) Explore complex information spaces (d) Encrypt data	**1**	2	2	2	2
	iv.	Non-linear magnification is commonly used in- (a) Fisheye views (b) Coordinate systems (c) Time series analysis (d) Statistical data graphics	**1**	2	2	2	2

v.	In visualization, encoding data using size is best for representing- (a) Text (b) Images (c) Quantitative differences (d) Sound	**1**	2	2	2	2			
vi.	Which of the following encodes data using color in visualization? (a) Data Mapping (b) Line Chart (c) Trees (d) Non Linear Magnification	**1**	2	1	1	1			
vii.	Interactive 3D illustrations combine images and- (a) Sound (b) Text (c) Videos (d) Animations	**1**	2	3	2	2			
viii.	Continuous time-series visualization is useful for- (a) Encoding text (b) Discrete event visualization (c) Tracking data over periods (d) Comparing web works	**1**	2	3	3	3			
ix.	D3.js is primarily used for- (a) Web development (b) Data visualization (c) Software testing (d) Database management	**1**	3	3	3	3			
x.	Which of the following visualization idioms is best used to compare proportions within a whole? (a) Line Chart (b) Vertical Bar Chart (c) Pie Chart (d) Area Chart	**1**	2	1	1	1			
Q.2	i.	Identify different data sources commonly used in data visualization. Discuss the importance of selecting appropriate data sources for accurate visualization.	**2**	2	1	1	1		
	ii.	Explain the importance of mapping data onto aesthetics in data visualization. How does it enhance the interpretability of data?	**3**	2	5	2	2		

	iii.	Describe the role of coordinate systems and axes in data visualization. Why are they crucial for representing data accurately?	**5**	2	5	3	3		
OR	iv.	Explain the concept of time series in data visualization. How are time series data graphics used to analyse trends over time?	**5**	2	5	2	2		
Q.3	i.	Explain the concept of comprehensible fisheye views and their significance in 3D data visualization.	**2**	2	3	2	2		
	ii.	Describe the role of abstraction in computer graphics. Provide examples of how abstraction is used in user interfaces.	**8**	3	3	3	3		
OR	iii.	Explore how fisheye views can be utilized for 3D data. What are the benefits and challenges associated with using fisheye views for this purpose?	**8**	3	3	2	3		
Q.4	i.	Discuss the process and significance of data mapping. Provide examples of how data is mapped in different contexts.	**3**	1	5	2	3		
	ii.	Explain how line charts with multiple lines can be used to represent complex datasets. Discuss the key considerations for ensuring these charts are clear and effective.	**7**	2	5	3	2		
OR	iii.	Explain the differences and similarities between 1D, 2D, and 3D visualizations. How do these dimensions impact the way data is interpreted?	**7**	2	5	3	3		
Q.5	i.	Discuss the methods and significance of visualizing words and text.	**4**	1	5	2	2		
	ii.	Describe the importance of consistency between rendered images and their textual labels in interactive 3D illustrations. How does this consistency impact user experience?	**6**	3	5	2	3		
OR	iii.	Differentiate between continuous time-series visualization and discrete event visualization. Provide examples of when each type is most effectively used.	**6**	3	5	3	4		

Marking Scheme

CS3ED10 Data Visualization

Q.1	i)	**b) Adding irrelevant data**	**1**
	ii)	**b) Continuous data over time**	**1**
	iii)	**c) Explore complex information spaces**	**1**
	iv)	**a) Fisheye Views**	**1**
	v)	**c) Quantitative differences**	**1**
	vi)	**a) Data Mapping**	**1**
	vii)	**b) Text**	**1**
	viii)	**c) Tracking data over periods**	**1**
	ix)	**b) Data visualization**	**1**
	x)	**c) Pie Chart**	**1**

Q.2	i.	Different data sources - 1 mark Importance - 1 mark	**2**
	ii.	Importance of mapping - 2 marks Enhance the interpretability - 1 mark	**3**
	iii.	Role of coordinate Why are they crucial for representing data accurately?	**5**
OR	iv.	Concept of time series - 3 marks Analyse trends over time - 2 marks	**5**

Q.3	i.	Concept of comprehensible fisheye views and their significance in 3 D data visualization.	**2**
	ii.	Describe the role of abstraction - 6 marks examples - 2 marks	**8**
OR	iii.	How fisheye views can be utilized for 3 D data. 4 marks benefits and challenges 4 marks	**8**

Q.4	i.	Process and significance examples	**3**
	ii.	How line charts with multiple lines - 4 marks key considerations - 3 marks	**7**
OR	iii.	Differences and similarities - 4 marks Impact the way data is interpreted - 3 marks	**7**

Q.5	i.	Discuss the methods and significance of visualizing words and text.	**4**
	ii.	Importance of consistency - 3 marks Impact user experience - 3 marks	**6**
OR	iii.	Differentiate between continuous time-series visualization and Discrete event visualization - 4 marks Examples - 2 marks	**6**

Q.6

	i.	Describe how marks and channels are encoded in D3 marks.js. Provide examples of how this encoding enhances data representation.	**5**
	ii.	Compare and contrast - 3 marks Specific use cases - 2 marks	**5**
	iii.	Visualization idiom -3 marks D3 marks.js facilitate -2 marks	**5**

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P.T.O.