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Course Code	22CA/CD633
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Sixth Semester B.E. Degree Examinations, June/July 2025

DATA VISUALIZATION WITH POWER BI

(Common to CSE- AI & CSE-DS)

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions choosing ONE full Question from each Module.
 2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTL:CO: PI)</u>
<u>Module-1</u>			
1.	a. What are the various sources and tools available for acquiring data, and how can they be effectively utilized for data analysis and visualization?	07	(2 :1: 1.4.1)
	b. Write short notes on: (i) Data Visualization Tools (ii) Widgets (iii) Charting Primitives	06	(2 :1: 1.4.1)
	c. What are the seven stages involved in data visualization process, and how do they contribute to the effective communication of insights and patterns in data?	07	(2 :1: 1.4.1)
(OR)			
2.	a. Describe the primary objectives of data visualization, and what are some common data visualization options that can be used to achieve these objectives?	07	(2 :1: 1.4.1)
	b. Explain the concept of mapping in data visualization, and how are different types of maps used to communicate data insights?	06	(2 :1: 1.4.1)
	c. Define data visualization and outline the key methodologies used to create effective visual representations of data.	07	(2 :1: 1.4.1)
<u>Module-2</u>			
3.	a. How do text markup languages facilitate data parsing, and what are the key features and benefits of using markup languages such as XML and HTML?	07	(2 :2: 2.2.1)
	b. How can data be extracted and processed from various sources and what are the key considerations for dealing with large numbers of files and compressed data?	06	(3 :2: 3:4:1)
	c. What are the key concepts and techniques involved in parsing data, and how can they be applied to extract insights from complex data sets?	07	(2 :2: 2.2.1)
(OR)			
4.	a. What is the role of regular expressions (regexps) in data parsing, and how can they be used to extract patterns and information from text-based data sets?	07	(2 :2: 2.2.1)
	b. What are the various sources and tools available for acquiring data, and how can they be effectively utilized for data analysis and visualization?	06	(3 :2: 3:4:1)
	c. What are the key steps involved in exploring connections and correlations in data, and how can these steps be applied to refine and interact with the data?	07	(2 :2: 2.2.1)

Module-3

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| 5. | a. | Describe how to create a simple bar chart using a popular data visualization library like D3.js or Matplotlib. | 07 | (2 :3: 2.2.1) |
| | b. | Discuss how to design a visualization system to represent attacking and defending scenarios. | 06 | (3 :3: 3:4:1) |
| | c. | Write a short note on (i) Geomapping (ii) Interactivity (iii) Exporting | 07 | (2 :3: 2.2.1) |

(OR)

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| 6. | a. | Describe different layout types which help in uncovering various insights from data. | 07 | (2 :3: 2.2.1) |
| | b. | How can intrusion detection log data be visualized to identify potential security threats or attacks? | 06 | (3 :3: 3:4:1) |
| | c. | What is GeoJSON? Describe how does it differ from standard JSON? | 07 | (2 :3: 2.2.1) |

Module-4

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| 7. | a. | Discuss the main elements of the Power BI interface and how they navigate. | 07 | (2 :4: 2.2.1) |
| | b. | What is the power of the data() function in D3.js, and how does it enable the creation of dynamic, data-driven visualizations? | 06 | (2 :4: 3:4:1) |
| | c. | What are the main components of Power BI? Explain working of each component. | 07 | (2 :4: 2.2.1) |

(OR)

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| 8. | a. | In what ways can you personalize and configure the Power BI interface to better align with your workflow or preferences? | 07 | (2 :4: 2.2.1) |
| | b. | Write concise notes on the following visualization techniques in Power BI: (i) Column and Bar Charts (ii) Ranking | 06 | (2 :4: 3:4:1) |
| | c. | What is meant by 'Chart Anatomy' in Power BI, and why is understanding it important for effective visual communication? | 07 | (2 :4: 2.2.1) |

Module-5

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| 9. | a. | How is a Bar Chart used in Power BI to visualize dynamic data changes, and how does a Pie Chart represent dynamic proportions? Illustrate with relevant diagrams. | 07 | (2 :5: 2.2.1) |
| | b. | What distinguishes Pie charts from Donut charts in Power BI, and how can each be used to visualize proportions effectively? (Include diagrams to enhance the explanation.) | 06 | (3 :5: 3:4:1) |
| | c. | What is a word cloud in Power BI, and how is it used to visually emphasize key terms within textual data? | 07 | (2 :5: 2.2.1) |

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| 10. | a. | What are some examples of advanced visuals in Power BI, and how do they enhance data analysis and presentation? (Support your explanation with relevant diagrams.) | 07 | (2 :5: 2.2.1) |
| | b. | What is a Tornado Chart in Power BI, and how is it used to compare contrasting or opposing data categories effectively? | 06 | (3 :5: 2:2:1) |
| | c. | How do you design a Sankey Chart in Power BI to illustrate complex data flows and interconnections effectively? | 07 | (2 :5: 3:4:1) |

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