



**B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024**

(Regulation 2018)

Sixth Semester

**INFORMATION TECHNOLOGY**

U18ITE0003: Data Visualization

**COURSE OUTCOMES**

**CO1:** Explain principles of visual perception.

**CO2:** Apply core skills for visual analysis.

**CO3:** Explain visualization for time-series analysis and ranking analysis.

**CO4:** Outline visualization for deviation ,distribution, correlation and multivariate analysis.

**CO5:** Demonstrate the skills in information dashboard design.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

**(Answer not more than 40 words)**

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|--|-----|-------------------|
| 1. Define visual perception in the context of data visualization.                                  | CO1 | [K <sub>1</sub> ] |
| 2. List and explain any two traits of meaningful data.   | CO2 | [K <sub>2</sub> ] |
| 3. What is time-series analysis and why is it important?   | CO3 | [K <sub>3</sub> ] |
| 4. Differentiate between ranking analysis and deviation analysis.                                  | CO3 | [K <sub>3</sub> ] |
| 5. Explain the purpose of reference lines and regions in data visualization.                       | CO2 | [K <sub>2</sub> ] |
| 6. Describe distribution analysis and mention one technique used for this analysis.                | CO4 | [K <sub>2</sub> ] |
| 7. What is multivariate analysis, and when would you use it?                                       | CO4 | [K <sub>3</sub> ] |
| 8. Outline two best practices for designing effective information dashboards.                      | CO5 | [K <sub>3</sub> ] |
| 9. Describe how over-plotting can be reduced in data visualization.                                | CO2 | [K <sub>3</sub> ] |
| 10. Why is understanding correlation analysis important in data visualization? Provide an example. | CO4 | [K <sub>3</sub> ] |

**Answer any FIVE Questions:-**

**PART B (5 x 16 = 80 Marks)**

**(Answer not more than 400 words)**

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|---|-----|-------------------|
| 11. Explain the principles of visual perception and discuss how they impact effective data visualization. | CO1 | [K <sub>3</sub> ] |
|---|-----|-------------------|

12. a) Design a dashboard layout for a retail sales analysis report. Include elements such as KPIs, charts, and filters you would include. CO5 [K<sub>4</sub>]
- b) Explain the importance of "focus and context" in dashboard design and how it affects user experience. CO5 [K<sub>3</sub>]
13. Consider a dataset containing monthly sales data for multiple regions over three years. CO3 [K<sub>4</sub>]
- Design a visualization approach to analyze both trends and seasonal patterns in this dataset. Discuss potential challenges in this visualization and suggest solutions.
14. Analyze the impact of choosing inappropriate scales in data visualization. CO2 [K<sub>4</sub>]
- Provide examples of how misinterpretation can occur and suggest best practices for scale selection.
15. a) Explain correlation analysis and provide an example where this is useful in business analytics. CO4 [K<sub>3</sub>]
- b) Discuss the potential pitfalls of correlation analysis and how they can be avoided. CO4 [K<sub>3</sub>]
16. Evaluate the effectiveness of various deviation analysis techniques used in business dashboards. Include at least two examples and discuss their applicability. CO3 [K<sub>4</sub>]

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