# SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)
S.R.M. Nagar, Kattankulathur. 603 203

## DEPARTMENT OF COMPUTER APPLICATIONS

## QUESTION BANK

**II SEMESTER**

**PMC302 – DATA VISUALIZATION**
**Regulations 2024**

**Academic Year : 2024-2025 EVEN**

**Prepared By**
**K.MANIRAJ – Assistant Professor / MCA**

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**QUESTION BANK**

**Name of the Faculty : Mr.K.MANIRAJ**
**Course Name : DATA VISUALIZATION**
**Course Code : PMC302**
**Sem / Branch / Sec : II / MCA / II**
**Academic Year : 2024-2025 EVEN Semester**

## UNIT-1 : INTRODUCTION TO DATA VISUALIZATION

Context of data visualization – Definition, Methodology, Visualization design objectives. Key Factors – Purpose, visualization function and tone, visualization design options – Data representation, Data Presentation, Seven stages of data visualization, widgets and data visualization tools.

### PART A

| Q.No | Question | Marks | Level | Competence | Course Outcome |
|---|---|---|---|---|---|
| 1 | Give two examples of data visualization in the real world? | 2 | BTL2 | Understand | CO1 |
| 2 | What is the primary purpose of data visualization? | 2 | BTL1 | Remember | CO1 |
| 3 | State two methodology used in the creation of data visualizations. | 2 | BTL2 | Understand | CO1 |
| 4 | What are the objectives of data visualization? | 2 | BTL1 | Remember | CO1 |
| 5 | What is the context of data visualization? | 2 | BTL1 | Remember | CO1 |
| 6 | List out the advantages of data visualization. | 2 | BTL1 | Remember | CO1 |
| 7 | What is meant by "data representation" in the context of data visualization? | 2 | BTL1 | Remember | CO1 |
| 8 | What is the primary purpose of data presentation in the visualization process? | 2 | BTL2 | Understand | CO1 |
| 9 | Write down the key factors? | 2 | BTL1 | Remember | CO1 |
| 10 | Classify the data visualization functions | 2 | BTL2 | Understand | CO1 |
| 11 | Identify the types of data visualization functions. | 2 | BTL2 | Understand | CO1 |
| 12 | Define tone | 2 | BTL1 | Remember | CO1 |
| 13 | List out the types of tone. | 2 | BTL1 | Remember | CO1 |
| 14 | Explain the design options | 2 | BTL2 | Understand | CO1 |
| 15 | List out the types of data visualization. | 2 | BTL1 | Remember | CO1 |
| 16 | List out the different types of charts. | 2 | BTL1 | Remember | CO1 |
| 17 | How will you visualize the groups in data visualization? | 2 | BTL2 | Understand | CO1 |
| 18 | What is Data Visualization and Why is It Important? | 2 | BTL2 | Understand | CO1 |
| 19 | Define Widgets | 2 | BTL1 | Remember | CO1 |
| 20 | What is a heatmap? | 2 | BTL1 | Remember | CO1 |

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|---|---|---|---|---|---|
| 21 | What are the different types of charts? | 2 | BTL2 | Understand | CO1 |
| 22 | Name one type of widget commonly used in data visualization dashboards. | 2 | BTL1 | Remember | CO1 |
| 23 | What is a data visualization tool? | 2 | BTL1 | Remember | CO1 |
| 24 | List out the types of tools for data visualizations. | 2 | BTL1 | Remember | CO1 |

| PART B | | | | | |
|---|---|---|---|---|---|
| **Q.No** | **Question** | **Marks** | **Level** | **Competence** | **Course Outcome** |
| 1 | Given a dataset of sales figures for a retail company, apply the principles of data visualization to create a visualization that effectively communicates sales performance across different regions. | 16 | BTL3 | Apply | CO1 |
| 2 | Given a set of temperature data over a week, suggest an appropriate representation. | 16 | BTL3 | Apply | CO1 |
| 3 | When designing data visualization what are the principles to be followed? | 16 | BTL3 | Apply | CO1 |
| 4 | In a real-time dashboard, how would you use a widget to display the current stock price? | 16 | BTL3 | Apply | CO1 |
| 5 | Recommend a data visualization tool for creating interactive charts for a web-based application. | 16 | BTL3 | Apply | CO1 |
| 6 | Compare the effectiveness of a table widget vs. a chart widget for presenting data in a financial dashboard. | 16 | BTL4 | Analyze | CO1 |
| 7 | Analyze the limitations of free vs. paid data visualization tools for business analytics. | 16 | BTL4 | Analyze | CO1 |
| 8 | Analyze the impact of color choices on the effectiveness of data presentation in a business report. | 16 | BTL4 | Analyze | CO1 |
| 9 | Compare and contrast the use of bar charts and pie charts for displaying categorical data. | 16 | BTL4 | Analyze | CO1 |
| 10 | Break down the methodology you would use for creating an interactive dashboard. | 16 | BTL3 | Apply | CO1 |
| 11 | Analyze how the tone of a visualization could influence the viewer's perception of the data. | 16 | BTL4 | Analyze | CO1 |
| 12 | Evaluate the use of 3D visualizations for presenting financial data. | 16 | BTL4 | Analyze | CO1 |
| 13 | Create a visualization for a dataset that requires a balanced approach between exploration and explanation. | 16 | BTL5 | Create | CO1 |
| 14 | Design a new approach for the data cleaning stage in data visualization, focusing on handling missing values. | 16 | BTL5 | Create | CO1 |
| 15 | Create a set of interactive widgets for a data visualization dashboard that monitors website traffic in real time. | 16 | BTL5 | Create | CO1 |
| 16 | Explain the five best widget types for showcasing the performance of data visualizations? | 16 | BTL3 | Apply | CO1 |
| 17 | Explain the Seven Stages of Data Visualization | 16 | BTL3 | Apply | CO1 |

## UNIT-2 : VISUALIZATION TECHNIQUES FOR TIME-SERIES, TREES & GRAPHS

Mapping – Time series - Connections and correlations – Indicator – Area chart-Pivot table- Scatter charts, Scatter maps – Tree maps, Space filling and non-space filling methods – Hierarchies and Recursion - Networks and Graphs-Displaying Arbitrary Graphs-node linkgraph-Matrix representation for graphs- Info graphics

### PART A

| Q.No | Question | Marks | Level | Competence | Course Outcome |
|---|---|---|---|---|---|
| 1 | What is a time series in data analysis? | 2 | BTL1 | Remember | CO2 |
| 2 | Explain the use of time series in mapping. | 2 | BTL2 | Understand | CO2 |
| 3 | Define correlation in data analysis. | 2 | BTL1 | Remember | CO2 |
| 4 | How do connections differ from correlations in data analysis? | 2 | BTL2 | Understand | CO2 |
| 5 | What is a data indicator? | 2 | BTL1 | Remember | CO2 |
| 6 | Why are indicators important in data visualization? | 2 | BTL2 | Understand | CO2 |
| 7 | What is an area chart? | 2 | BTL1 | Remember | CO2 |
| 8 | Describe one advantage of using area charts. | 2 | BTL2 | Understand | CO2 |
| 9 | What is a pivot table? | 2 | BTL1 | Remember | CO2 |
| 10 | How does a pivot table assist in data analysis? | 2 | BTL2 | Understand | CO2 |
| 11 | Define a scatter chart. | 2 | BTL1 | Remember | CO2 |
| 12 | How is a scatter map different from a scatter chart? | 2 | BTL2 | Understand | CO2 |
| 13 | What is a tree map? | 2 | BTL1 | Remember | CO2 |
| 14 | Explain one application of tree maps in data visualization. | 2 | BTL2 | Understand | CO2 |
| 15 | What is a space-filling visualization method? | 2 | BTL1 | Remember | CO2 |
| 16 | Compare space-filling and non-space-filling visualizations. | 2 | BTL2 | Understand | CO2 |
| 17 | What is recursion in data structures? | 2 | BTL1 | Remember | CO2 |
| 18 | How are hierarchies represented in data visualization? | 2 | BTL2 | Understand | CO2 |
| 19 | What is a node in a network graph? | 2 | BTL1 | Remember | CO2 |
| 20 | Differentiate between a node-link graph and a matrix representation for graphs. | 2 | BTL2 | Understand | CO2 |
| 21 | What is an arbitrary graph? | 2 | BTL1 | Remember | CO2 |
| 22 | Give an example where displaying arbitrary graphs is useful. | 2 | BTL2 | Understand | CO2 |
| 23 | Define an infographics. | 2 | BTL1 | Remember | CO2 |
| 24 | Why are infographics useful in communication? | 2 | BTL2 | Understand | CO2 |

| PART B | | | | | |
|---|---|---|---|---|---|
| **Q.No** | **Question** | **Marks** | **Level** | **Competence** | **Course Outcome** |
| 1 | (i)Explain the importance of time series analysis in forecasting. | 8 | BTL3 | Apply | CO2 |
| | (ii)Discuss the challenges and techniques to address missing data and outliers in time series visualizations. | 8 | | | |
| 2 | (i) Explain in detail about mapping with example. | 8 | BTL3 | Apply | CO2 |
| | (ii) Explain in detail about Time series with example. | 8 | | | |
| 3 | Illustrate Connections and correlations in data visualization? | 16 | BTL4 | Analyze | CO2 |
| 4 | Explain in detail. | | BTL4 | Analyze | CO2 |
| | (i) Discuss about Bar chart and histograms with example. | 8 | | | |
| | (ii) Discuss about Scatterplot maps in detail. | 8 | | | |
| 5 | (i) Explain in detail about Trees in data visualization. | 8 | BTL3 | Apply | CO2 |
| | (ii) Explain in detail about Hierarchies and Recursion in data visualization. | 8 | | | |
| 6 | Explain in detail about Networks and Graphs and Info graphics that are used to visualize the data. | 16 | BTL4 | Analyze | CO2 |
| 7 | Create a map and apply the Trees, Hierarchies and Recursion techniques. | 16 | BTL5 | Evaluate | CO2 |
| 8 | Analyze the difference between space-filling methods (tree maps) and non-space-filling methods for hierarchical visualizations. | 16 | BTL4 | Analyze | CO2 |
| 9 | Discuss the use of pivot tables combined with area charts or tree maps for representing hierarchical data such as product categories and subcategories. | 16 | BTL4 | Analyze | CO2 |
| 10 | Explain the differences between scatter charts and scatter maps, and justify the use of scatter maps for geographic data analysis. | 16 | BTL4 | Analyze | CO2 |
| 11 | (i) Compare and contrast different types of time series visualizations, such as line charts, bar charts, and area charts. | 8 | BTL4 | Analyze | CO2 |
| | (ii) What are the strengths and limitations of each type when representing time-dependent data? Provide examples of situations where each would be most effective. | 8 | BTL5 | Evaluate | CO2 |
| 12 | (i) Explain the role of interactive elements in scatterplot maps, such as tooltips, zooming, and filtering. | 8 | BTL4 | Analyze | CO2 |
| | (ii) Explain the key elements of creating an effective scatterplot map, such as data point size, color, and geographic coordinates. | 8 | BTL4 | Analyze | CO2 |
| 13 | (i)Explain how recursive visualizations can be used to model hierarchical data, such as taxonomies or organizational structures. | 8 | BTL3 | Apply | CO2 |
| | (ii)Discuss the advantages of using recursive tree visualizations compared to flat representations, and provide an example where recursion significantly improved Understand. | 8 | BTL4 | Analyze | CO2 |
| 14 | Discuss the role of centrality measures in network analysis. What are the different types of centrality (degree, closeness, betweenness) and how are they used to analyze network data? | 16 | BTL3 | Apply | CO2 |

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| 15 | Compare node-link graphs with matrix representations for modeling customer referral networks. Provide an example of when a matrix representation is more effective. | 16 | BTL4 | Analyze | CO2 |
| 16 | (i) Identify the key elements (charts, graphs, or maps) you would use in the infographic. | 8 | BTL3 | Apply | CO2 |
| | (ii) Briefly outline how color coding or size variations could enhance the clarity of your infographic. | 8 | | | |
| 17 | (i) Explain why a pivot table combined with a time series chart is an effective choice for product sales. | 8 | BTL3 | Apply | CO2 |
| | (ii) Demonstrate how a scatter chart could be used to find correlations between sales and marketing spend in different | 8 | | | |

## UNIT-3 : TEXT AND DOCUMENT VISUALIZATION

Acquiring data, - Where to Find Data, Tools for Acquiring Data from the Internet, Locating Files for Use with Processing, Loading Text Data, Dealing with Files and Folders, Listing Files in a Folder, Asynchronous Image Downloads, Web Techniques, Parsing data - Levels of Effort, Tools for Gathering Clues, Text Markup Languages, Regular Expressions, Grammars and BNF Notation, Compressed Data, Vectors and Geometry, Binary Data Formats, Advanced Detective Work.

### PART A

| Q.No | Question | Marks | Level | Competence | Course Outcome |
|---|---|---|---|---|---|
| 1 | What is data acquisition in the context of data analysis? | 2 | BTL1 | Remember | CO3 |
| 2 | Name two common sources where data can be found for analysis. | 2 | BTL1 | Remember | CO3 |
| 3 | What is a web scraper? | 2 | BTL1 | Remember | CO3 |
| 4 | How do APIs help in acquiring data from the internet? | 2 | BTL2 | Understand | CO3 |
| 5 | Describe the difference between absolute and relative file paths. | 2 | BTL2 | Understand | CO3 |
| 6 | What does it mean to load text data into a program? | 2 | BTL1 | Remember | CO3 |
| 7 | Why is it important to properly format text data before loading it? | 2 | BTL2 | Understand | CO3 |
| 8 | What is the purpose of organizing data into files and folders? | 2 | BTL1 | Remember | CO3 |
| 9 | What command or function is used to list files in a folder? | 2 | BTL1 | Remember | CO3 |
| 10 | How can listing files in a folder help with data organization? | 2 | BTL2 | Understand | CO3 |
| 11 | Why is asynchronous downloading useful when dealing with large image datasets? | 2 | BTL2 | Understand | CO3 |
| 12 | How is HTTP used to request and receive data from the web? | 2 | BTL2 | Understand | CO3 |
| 13 | What does it mean to parse data? | 2 | BTL1 | Remember | CO3 |
| 14 | Define levels of effort in data gathering. | 2 | BTL1 | Remember | CO3 |
| 15 | Name a tool commonly used for gathering data clues. | 2 | BTL1 | Remember | CO3 |
| 16 | What is JSON?Give the synatax | 2 | BTL2 | Understand | CO3 |
| 17 | Explain the purpose of using text markup languages like HTML or XML. | 2 | BTL2 | Understand | CO3 |

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| 18 | Give the structure of HTML tag for creating table | 2 | BTL1 | Remember | CO3 |
| 19 | Explain how regular expressions help in pattern matching. | 2 | BTL2 | Understand | CO3 |
| 20 | Explain how grammars are used in defining the syntax of programming languages. | 2 | BTL2 | Understand | CO3 |
| 21 | Why is compressed data used in storage and transmission? | 2 | BTL2 | Understand | CO3 |
| 22 | What is a vector in geometric representation? | 2 | BTL1 | Remember | CO3 |
| 23 | What is a binary data format?Give example | 2 | BTL1 | Remember | CO3 |
| 24 | Explain how combining different data sources can lead to new insights. | 2 | BTL2 | Understand | CO3 |
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**PART B**

| Q.No | Question | Marks | Level | Competence | Course Outcome |
|---|---|---|---|---|---|
| 1 | Discuss in detail about the Tools for Acquiring Data. | 16 | BTL3 | Apply | CO3 |
| 2 | How to Locate Files for use with Processing.Give example | 16 | BTL3 | Apply | CO3 |
| 3 | Discuss the following | | BTL4 | Analyze | CO3 |
| | i. LoadString() versus python Methods | 8 | | | |
| | ii. Reading Files Progressively | 8 | | | |
| 4 | How to deal with Files and folders .Discuss in detail | 16 | BTL3 | Apply | CO3 |
| 5 | How to List files in Folder | 16 | BTL3 | Apply | CO3 |
| 6 | Discuss in detail about Asynchronous image downloads. | 16 | BTL4 | Analyze | CO3 |
| 7 | How to create a database .Discuss how SQL language is used to access the database.How to use MYSQL with processing. | 16 | BTL5 | Evaluate | CO3 |
| 8 | Describe : | 8 | BTL3 | Apply | CO3 |
| | i. Performance Aspects of Database in interactive Applications | | | | |
| | ii. Dealing with Large number of Files | 8 | | | |
| 9 | Differentiate between Text Markup Language and Hyper Text Markup language Explain in detail with examples | 16 | BTL4 | Analyze | CO3 |
| 10 | Discuss: | | BTL4 | Analyze | CO3 |
| | i) Is a parser necessary? | 8 | | | |
| | Ii)Parsing and manipulating tables from HTML files | 8 | | | |
| 11 | Describe with an example how the Extensible markup language(XML) is used. | 16 | BTL4 | Analyze | CO3 |
| 12 | Differentiate JSON and XML with example. | 16 | BTL4 | Analyze | CO3 |
| 13 | Describe Grammars and BAckus Nour Form | 16 | BTL5 | Evaluate | CO3 |
| 14 | How data is compressed and discuss the various compression system | 16 | BTL3 | Apply | CO3 |
| 15 | What are the problems that exist with data pulled from web?How to get around these problems | 16 | BTL6 | Create | CO3 |
| 16 | Describe the following | | BTL5 | Evaluate | CO3 |
| | i. Parsing data | 8 | | | |
| | ii. Levels of Effort | 8 | | | |
| 17 | Describe the various Binary File formats | 16 | BTL5 | Evaluate | CO3 |

## UNIT-4 : INTERACTIVE DATA VISUALIZATION

Drawing with data – Scales – Axes – Updates, Transition and Motion – Interactivity - Layouts –Geo-mapping – Exporting, Framework – D3.js, Tableau Dashboards.

### PART A

| Q.No | Question | Marks | Level | Competence | Course Outcome |
|---|---|---|---|---|---|
| 1 | Define interactive data visualization? | 2 | BTL1 | Remember | CO4 |
| 2 | Explain the importance of interactivity in data visualizations. | 2 | BTL2 | Understand | CO4 |
| 3 | What does drawing with data mean in the context of visualization? | 2 | BTL1 | Remember | CO4 |
| 4 | How does drawing with data help in conveying complex information? | 2 | BTL2 | Understand | CO4 |
| 5 | What is the purpose of scales in data visualization? | 2 | BTL1 | Remember | CO4 |
| 6 | Classify the uses of modern interactive data visualization. | 2 | BTL2 | Understand | CO4 |
| 7 | What role do axes play in data visualizations? | 2 | BTL1 | Remember | CO4 |
| 8 | How do axes help in Understand data distributions? | 2 | BTL2 | Understand | CO4 |
| 9 | What are transitions in data visualization? | 2 | BTL1 | Remember | CO4 |
| 10 | Explain why motion and updates are important in interactive data visualization. | 2 | BTL2 | Understand | CO4 |
| 11 | What are common types of interactivity in data visualizations? | 2 | BTL1 | Remember | CO4 |
| 12 | How does interactivity improve the Understand of data? | 2 | BTL2 | Understand | CO4 |
| 13 | What is meant by the layout of a data visualization? | 2 | BTL1 | Remember | CO4 |
| 14 | Why is an effective layout crucial for data visualizations? | 2 | BTL2 | Understand | CO4 |
| 15 | What is geo-mapping in the context of data visualization? | 2 | BTL1 | Remember | CO4 |
| 16 | Explain how geo-mapping helps in analyzing regional data. | 2 | BTL2 | Understand | CO4 |
| 17 | What does exporting mean in data visualization? | 2 | BTL1 | Remember | CO4 |
| 18 | Why is exporting data visualizations important? | 2 | BTL2 | Understand | CO4 |
| 19 | What is D3.js in the context of data visualization? | 2 | BTL1 | Remember | CO4 |
| 20 | How does D3.js help in building customized visualizations? | 2 | BTL2 | Understand | CO4 |
| 21 | What is a Tableau dashboard? | 2 | BTL1 | Remember | CO4 |
| 22 | How do Tableau dashboards enhance data analysis? | 2 | BTL2 | Understand | CO4 |
| 23 | Define Collaboration and sharing. | 2 | BTL1 | Remember | CO4 |
| 24 | Write the HTML snippet for drawing bar chart. | 2 | BTL2 | Understand | CO4 |

### PART B

| Q.No | Question | Marks | Level | Competence | Course Outcome |
|---|---|---|---|---|---|
| 1 | Narrate about drawing with data in interactive data visualization. | 16 | BTL5 | Evaluate | CO4 |
| 2 | (i) Explain in detail about normalization. | 8 | BTL3 | Apply | CO4 |
| | (ii) Explain in detail about scaling and scatter plot. | 8 | | | |

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| 3 | Illustrate Refining plots? Explain in detail. | 16 | BTL3 | Apply | CO4 |
| 4 | (i) Discuss about Axes. | 8 | BTL4 | Analyze | CO4 |
| | (ii) Discuss in detail about setting axes. | 8 | | | |
| 5 | (i) Narrate about Ordinal scales. | 8 | BTL4 | Analyze | CO4 |
| | (ii) Explain in detail about Range function. | 8 | | | |
| 6 | Explain in detail about transition function to visualize the data. | 16 | BTL3 | Apply | CO4 |
| 7 | Demonstrate on updating Axes in detail. | 16 | BTL3 | Apply | CO4 |
| 8 | Explain in detail about D3 layouts. | 16 | BTL3 | Apply | CO4 |
| 9 | Explain in detail about Path and Projection in detail. | 16 | BTL3 | Apply | CO4 |
| 10 | (i) Define with example about Choropleth. | 8 | BTL4 | Analyze | CO4 |
| | (ii) Explain about acquiring and parsing geodata. | 8 | | | |
| 11 | Define the updation available along with motion in interactive data visualization. | 16 | BTL4 | Analyze | CO4 |
| 12 | With relevant examples describe about multiple box plot and trellis plot. | 16 | BTL4 | Analyze | CO4 |
| 13 | How will you visualize the scales available in interactive data visualization? | 16 | BTL5 | Create | CO4 |
| 14 | Explain in detail about the Geomapping with interactive data visualization. | 16 | BTL4 | Analyze | CO4 |
| 15 | Examine the different features available in update and transition functions. | 16 | BTL4 | Analyze | CO4 |
| 16 | Illustrate the framework of large high dimensional interactive visualization. | 16 | BTL5 | Create | CO4 |
| 17 | Create data visualization with Tableau. | 16 | BTL5 | Create | CO4 |

## UNIT-5 : SECURITY IN DATA VISUALIZATION

Port scan visualization - Vulnerability assessment and exploitation - Firewall log visualization - Intrusion detection log visualization -Attacking and defending visualization systems – Creating secured visualization system.

### PART A

| Q.No | Question | Marks | Level | Competence | Course Outcome |
|---|---|---|---|---|---|
| 1 | What is a port scan visualization? | 2 | BTL1 | Remember | CO5 |
| 2 | How does port scan visualization help in identifying potential security threats? | 2 | BTL2 | Understand | CO5 |
| 3 | What types of attacks can be detected through port scan visualization? | 2 | BTL2 | Understand | CO5 |
| 4 | Give the Importance of vulnerability assessments | 2 | BTL1 | Remember | CO5 |
| 5 | What tools are commonly used for vulnerability assessment in cybersecurity? | 2 | BTL2 | Understand | CO5 |

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| 6 | Explain how vulnerability assessments assist in preventing cyberattacks. | 2 | BTL2 | Understand | CO5 |
| 7 | What does firewall log visualization involve? | 2 | BTL1 | Remember | CO5 |
| 8 | Give the steps in firewall visualization process | 2 | BTL1 | Remember | CO5 |
| 9 | How does visualizing firewall logs help in identifying network security issues? | 2 | BTL2 | Understand | CO5 |
| 10 | What kind of data is typically found in firewall log visualizations? | 2 | BTL1 | Remember | CO5 |
| 11 | What is the purpose of intrusion detection log visualization? | 2 | BTL1 | Remember | CO5 |
| 12 | What is the significance of visualizing intrusion detection system (IDS | 2 | BTL2 | Understand | CO5 |
| 13 | How does intrusion detection log visualization assist in identifying potential security breaches? | 2 | BTL2 | Understand | CO5 |
| 14 | Draw the intrusion detection System within a network structure. | 2 | BTL2 | Understand | CO5 |
| 15 | What is the role of attacking and defending visualization systems in cybersecurity? | 2 | BTL1 | Remember | CO5 |
| 16 | Explain how visualizations can be used to simulate and defend against cyberattacks. | 2 | BTL2 | Understand | CO5 |
| 17 | Give few Attacks that target the visualization system | 2 | BTL1 | Remember | CO5 |
| 18 | How can attackers use visualization systems for malicious activities? | 2 | BTL1 | Remember | CO5 |
| 19 | What are the key considerations when creating a secured visualization system? | 2 | BTL1 | Remember | CO5 |
| 20 | Give few tools for network security visualization | 2 | BTL2 | Understand | CO5 |
| 21 | What is network security visualization | 2 | BTL2 | Understand | CO5 |
| 22 | How can secure visualization systems prevent unauthorized data access? | 2 | BTL2 | Understand | CO5 |
| 23 | What are some common security vulnerabilities in visualization systems? | 2 | BTL1 | Remember | CO5 |
| 24 | Why is encryption important when creating secured visualization systems? | 2 | BTL1 | Remember | CO5 |

**PART B**

| Q.No | Question | Marks | Level | Competence | Course Outcome |
|---|---|---|---|---|---|
| 1 | Explain about port scan security and visualization. | 16 | BTL3 | Apply | CO5 |
| 2 | Explain about the various Intrusion Detection System Types in detail. | 16 | BTL3 | Apply | CO5 |
| 3 | Discuss in detail about | | BTL4 | Analyze | CO5 |
| | (i) Vulnerability assessment | 8 | | | |
| | (ii) Exploitation techniques. | 8 | | | |
| 4 | Explain in detail about the steps in firewall log visualization process and analysis. | 16 | BTL3 | Apply | CO5 |
| 5 | Explain in detail about the intrusion detection System (IDS) | 16 | BTL3 | Apply | CO5 |
| 6 | Draw the intrusion detection System (IDS) within a network structure. Explain the process in the IDS. | 16 | BTL3 | Apply | CO5 |
| 7 | Discuss in detail about | | BTL4 | Analyze | CO5 |
| | (i) Host based IDS | 8 | | | |
| | (ii) Cloud based IDS | 8 | | | |

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|---|---|---|---|---|---|
| 8 | Give a few Attacks that target the visualization system. Explain in detail. | 16 | BTL3 | Apply | CO5 |
| 9 | Discuss in detail about the visualization for security. | 16 | BTL3 | Apply | CO5 |
| 10 | Explain the key features of security visualization in detail. | 16 | BTL4 | Analyze | CO5 |
| 11 | Give a few tools for network security visualization and explain in detail. | 16 | BTL4 | Analyze | CO5 |
| 12 | Discuss in detail about | | BTL4 | Analyze | CO5 |
| | (i) Attacking the visualization systems. | 8 | | | |
| | (ii) Defending the visualization systems. | 8 | | | |
| 13 | Give a few examples of attacking and defending the visualization and explain in detail. | 16 | BTL5 | Evaluate | CO5 |
| 14 | Explain in detail about | | BTL3 | Apply | CO5 |
| | (i) Diagram to show the six steps of penetration testing. | 8 | | | |
| | (ii) Two types of detection methods in network intrusion detection system (NIDS) | 8 | | | |
| 15 | Discuss on the network security visualization methodologies, tools merits and demerits. | 16 | BTL4 | Analyze | CO5 |
| 16 | Interpret on the vulnerability assessment tools and elaborate on security scanning process. | 16 | BTL5 | Create | CO5 |
| 17 | (i) Narrate on various attacks in the visualization system. | 8 | BTL5 | Create | CO5 |
| | (ii) Demonstrate on visualization techniques for Intrusion systems. | 8 | BTL5 | Create | CO5 |

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