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Subject Code:- ACSDS0602

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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA  
(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VI - THEORY EXAMINATION (20.....- 20.....)

Subject: Business Intelligence and Data Visualization

Time: 3 Hours

Max. Marks: 100

**General Instructions:**

**IMP:** Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right -hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

**SECTION-A**

20

1. Attempt all parts:-

- 1-a. State determining the element that is not a core component of a typical BI architecture? [CO1,K1] 1
- (a) Firewall
- (b) ETL Tools
- (c) OLAP Servers
- (d) Data Warehouse
- 1-b. State how exploring the trend currently shaping the future of Business Intelligence? [CO1,K1] 1
- (a) Elimination of cloud computing
- (b) Integration of AI and machine learning
- (c) Removing end-user tools
- (d) Focusing solely on historical data
- 1-c. Identify BI project tasks that involve the construction of OLAP cubes? [CO2,K1] 1
- (a) Mobile optimization
- (b) Data cleaning
- (c) Front-end design
- (d) BI development
- 1-d. State the influence of BI tools on strategic-level decision-making? [CO2,K1] 1
- (a) Providing trend analysis and forecasts

- (b) Creating invoices
  - (c) Editing emails
  - (d) Blocking websites
- 1-e. State how can we evaluate the result of nesting SUM and AVG functions in Tableau (e.g., SUM(AVG([Sales])))? [CO3,K1] 1
- (a) Correct sales total
  - (b) Error
  - (c) NULL
  - (d) Unreliable aggregation
- 1-f. Identify appropriate scenarios for applying FIXED Level of Detail (LOD) expressions? [CO3,K1] 1
- (a) To filter values
  - (b) To aggregate at a specific level regardless of view
  - (c) To sort charts
  - (d) To format legends
- 1-g. State the ways to optimize the performance of a Tableau dashboard with a large dataset? [CO4,K1] 1
- (a) Using live connections, showing all data
  - (b) Using data extracts, filtering, and limiting marks
  - (c) Adding more calculated fields
  - (d) Increasing the number of worksheets
- 1-h. State the purpose of the role of Tableau Bridge when publishing data sources to Tableau Online? [CO4,K1] 1
- (a) Optimizes the speed of extracts
  - (b) Manages user authentication
  - (c) Enables live connections to on-premises data
  - (d) Creates backups of published workbooks
- 1-i. State the most effective way to visualize part-to-whole data in Power BI? [CO5,K1] 1
- (a) Line chart
  - (b) Pie chart
  - (c) Table
  - (d) Scatter plot
- 1-j. State how Power BI feature can help optimize performance for large datasets? [CO5,K1] 1
- (a) Changing visuals
  - (b) DAX Studio
  - (c) Aggregation tables
  - (d) Bookmarks

2. Attempt all parts:-

- |      |                                                                                                           |   |
|------|-----------------------------------------------------------------------------------------------------------|---|
| 2.a. | Explain the concept of metadata and assess its importance in Business Intelligence environments? [CO1,K2] | 2 |
| 2.b. | Describe how automated alerts enhance the efficiency of BI reporting? [CO2,K2]                            | 2 |
| 2.c. | Explain the impact of dragging a field to the Color shelf in Tableau? [CO3,K2]                            | 2 |
| 2.d. | State what happens when you drag a field to the Filters shelf? [CO4,K1]                                   | 2 |
| 2.e. | List any two formatting features in Power BI? [CO5,K1]                                                    | 2 |

**SECTION-B**

30

3. Answer any five of the following:-

- |      |                                                                                                                                                                                                      |   |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| 3-a. | Discuss some common assumptions end-users have about BI systems and how these assumptions impact BI adoption and State what is Data Lake and also explain the key functions of a Data Lake? [CO1,K1] | 6 |
| 3-b. | Explain self-service BI and how does it empower business users, also explain what are dimensions and measures in Tableau? [CO1,K2]                                                                   | 6 |
| 3-c. | Discuss the effectiveness of mobile BI in remote business monitoring. What limitations does it face? [CO2,K2]                                                                                        | 6 |
| 3-d. | Explain the ways Business Intelligence (BI) supports the identification of cost-saving opportunities and process optimization. Include relevant examples? [CO2,K2]                                   | 6 |
| 3.e. | Discuss data visualization and what Are the Key Components of Good Data Visualization and also describe the common configuration errors and how can they be fixed? [CO3,K2]                          | 6 |
| 3.f. | Explain the process of designing dashboards for mobile vs desktop? [CO4,K2]                                                                                                                          | 6 |
| 3.g. | Describe how Power BI handles real-time data sources and also compare and contrast a Histogram chart and Bar chart? [CO5,K2]                                                                         | 6 |

**SECTION-C**

50

4. Answer any one of the following:-

- |      |                                                                                                                                                        |    |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 4-a. | Differentiate between Big Data and Business Intelligence and also state how can users perform forecasting and predictive modeling in Tableau? [CO1,K4] | 10 |
| 4-b. | Explain the use of dashboards, scorecards, and KPIs in effective decision-making within BI systems? [CO1,K1]                                           | 10 |

5. Answer any one of the following:-

- |      |                                                                                                                                                                                                      |    |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| 5-a. | Explain the role of drill-up and drill-down functionalities in enhancing multidimensional analysis within BI tools. Support your explanation with real-world use cases? [CO2,K2]                     | 10 |
| 5-b. | Discuss the integration challenges and opportunities when deploying mobile BI solutions in large enterprises and also Explain the various ways in which charts can be added to a dashboard? [CO2,K2] | 10 |

6. Answer any one of the following:-

- 6-a. Discuss how we can connect to a CSV file, create a tree map, and add interactivity using filters and also Discuss the security features in Power BI. How is data access controlled? [CO3,K2] 10
- 6-b. Discuss an explanation of the Bar Chart with Color Range process with example and also state what are the supported file extensions in Tableau? [CO3,K2] 10
7. Answer any one of the following:-
- 7-a. Demonstrate via steps as how can we build a visual story from customer feedback data and analyze results? [CO4,K3] 10
- 7-b. Describe and design a dashboard that compares KPIs across departments and also explain how to remove 'All' options from a Tableau auto-filter and also write the procedure of it? [CO4,K2] 10
8. Answer any one of the following:-
- 8-a. Discuss and show how to use slicers and filters in a report to allow dynamic exploration of sales data and also state what Are the Key Components of Good Data Visualization? [CO5,K2] 10
- 8-b. Discuss the typical analytics process flow, how does Power BI fit into this process and also explain what functions the Power BI Query editor, also Create a calculated measure using DAX and use it in a visual to track performance? [CO5,K2] 10

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