PAPER ID-310870

**Roll No:**

## BTECH
## (SEM V) THEORY EXAMINATION 2023-24
## BUSINESS INTELLIGENCE AND ANALYTICS

**TIME: 3 HRS**                                                                       **M.MARKS: 100**

**Note:** **1.** Attempt all Sections. If require any missing data; then choose suitably.

### SECTION A

**1.** **Attempt *all* questions in brief.**                                          **2 x 10 = 20**

| Q no. | Question | Marks | CO |
|---|---|---|---|
| a. | What is the historical context of Business Intelligence, and how has it evolved over time? | 2 | 1 |
| b. | Explain the significance of effective and timely decision-making in the context of Business Intelligence. | 2 | 1 |
| c. | Define Data Mining and highlight its significance in business intelligence. | 2 | 2 |
| d. | Explain the architecture of Data Mining. | 2 | 2 |
| e. | What is the purpose of Data Validation in the context of Business Intelligence? | 2 | 3 |
| f. | Explain the concept of Data Transformation. | 2 | 3 |
| g. | What is the analytics process? | 2 | 4 |
| h. | Differentiate between Descriptive, and Prescriptive Analytics. | 2 | 4 |
| i. | Define Business Activity Monitoring (BAM). | 2 | 5 |
| j. | What is Complex Event Processing (CEP)? | 2 | 5 |

### SECTION B

**2.** **Attempt any *three* of the following:**                                       **10 x 3 = 30**

| | | | |
|---|---|---|---|
| a. | Explore the significance of mathematical models in Business Intelligence. Discuss the types of models commonly used, their applications, and the impact they have on improving decision accuracy and foresight. | 10 | 1 |
| b. | Provide a detailed analysis of Online Analytical Processing (OLAP), including its tools and applications. Discuss how OLAP supports decision-making processes in organizations, and provide examples of its usage. | 10 | 2 |
| c. | Provide a comprehensive overview of Principal Component Analysis (PCA), discussing its principles, applications, and the benefits it offers in reducing the dimensionality of data for analysis in Business Intelligence. | 10 | 3 |
| d. | Discuss the Iris dataset, its significance, and its applications in data analytics. Explore how it is commonly used in machine learning and statistical analysis. | 10 | 4 |
| e. | Discuss the role of Business Process Management (BPM) in the implementation of Business Intelligence. Explore how BPM aligns with BI strategies and contributes to organizational optimization. | 10 | 5 |

### SECTION C

**3.** **Attempt any *one* part of the following:**                                    **10 x 1 = 10**

| | | | |
|---|---|---|---|
| a. | Investigate the challenges and advantages associated with Real-Time Business Intelligence systems. How do these systems enhance operational efficiency and responsiveness in dynamic business environments? | 10 | 1 |

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| | | | | |
|---|---|---|---|---|
| b. | Discuss the historical evolution of Business Intelligence, highlighting key milestones and technological advancements that have shaped its development over time. | 10 | 1 | |

| | | | |
|---|---|---|---|
| **4.** | **Attempt any *one* part of the following:** | **10 x 1 = 10** | |
| a. | Explore the principles of data modeling in the context of Data Warehousing. Discuss the importance of data modeling in designing an effective data warehouse and how it aids in information retrieval. | 10 | 2 |
| b. | Discuss the Star and Snowflake Schema models in the context of Data Warehousing. | 10 | 2 |

| | | | |
|---|---|---|---|
| **5.** | **Attempt any *one* part of the following:** | **10 x 1 = 10** | |
| a. | Explore the fundamental principles of Data Validation and its importance in ensuring the accuracy and reliability of data in Business Intelligence. | 10 | 3 |
| b. | Examine the concept of Data Reduction and its three main techniques: Sampling, Selection, and Principal Component Analysis (PCA). Discuss how each technique contributes to streamlining large datasets for efficient analysis. | 10 | 3 |

| | | | |
|---|---|---|---|
| **6.** | **Attempt any *one* part of the following:** | **10 x 1 = 10** | |
| a. | Explore the various analytical techniques used in Descriptive Analytics, including statistical methods and visualization tools. | 10 | 4 |
| b. | Provide an in-depth analysis of Predictive Analytics, discussing its methodologies, algorithms, and applications in forecasting future trends and making proactive business decisions. | 10 | 4 |

| | | | |
|---|---|---|---|
| **7.** | **Attempt any *one* part of the following:** | **10 x 1 = 10** | |
| a. | Explore the principles and methodologies of Root Cause Analysis in the context of Business Intelligence. | 10 | 5 |
| b. | Discuss the challenges and benefits associated with real-time monitoring in Business Activity Monitoring. Explore different scenarios where real-time monitoring is crucial for effective decision-making | 10 | 5 |