

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA-SEMESTER-II-EXAMINATION-WINTER-2024

Subject Code: 4529201**Date: 09/01/2025****Subject Name: Business Analytics****Time: 02:30 PM TO 05:30 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Use of simple calculators and non-programmable scientific calculators are permitted.

- Q.1 Explain in short answers** **14**
- (a) What is a Data Lake?
 - (b) What is a Dashboard?
 - (c) Name the different types of Business analytics.
 - (d) Name some examples of Unstructured data sources.
 - (e) Give some names of Data Visualization / Dashboard software.
 - (f) List the four important characteristics of Data Warehouse.
 - (g) Which Data Model is followed by OLAP systems?
- Q.2 (a)** Explain Business Analytics and its main components. How Business Analytics differs from Business Intelligence. **07**
- (b)** Explain Characteristics of OLTP system **07**
- OR**
- (b)** An OLAP system cube have three dimensions, namely a) Region – subdivided into North, West, South & East, b) Year – subdivided into Months, & c) Products subdivided into – Food, Beverages and Nutritional Supplements. The measure for the cube is ‘Sales Revenue’. (3 dimensions – 1 measure) **07**
- With the above example, explain Roll-up, and Slicing operations.
- Q.3 (a)** Structured Data have several advantages over Unstructured data. Explain. **07**
- (b)** What is Visual Analytics? State the advantages of Visuals. Explain the types of Visuals used for Categorical, Quantitative and Textual Data in Business Analytics. **07**
- OR**
- Q.3 (a)** Explain the process of Data Mining with a neat diagram. **07**
- (b)** What are Key Performance Indicators? Identify some Key Performance Indicators that you would like to monitor related to Financials of a company. **07**
- Q.4 (a)** Explain Business Performance Management Cycle. **07**
- (b)** Discuss some real-world application of Text Analytics in Business. **07**
- OR**
- Q.4 (a)** Big Data not only refers to the size of the data handled but also refers to rate at which data grows, the aggregation of various types of data, the authenticity of data and the values it creates for the Business. Justify the above statement by describing characteristics of Big Data. **07**
- (b)** Explain the application of Descriptive, Diagnostics, Predictive and Prescriptive Analytics in Production & Operations function of a company. **07**

Q.5 CASE STUDY:

ABC Hospitals is a chain of hospitals operating across multiple locations, offering a wide range of healthcare services including emergency care, surgery, diagnostics, and specialized treatments. As part of its commitment to excellence, ABC Hospitals aims to harness the power of analytics to enhance patient care, optimize operational efficiency, and drive business growth.

Analytics Objectives:

The company seeks to implement a comprehensive analytics framework encompassing descriptive, predictive, and text analytics to gain insights into patient outcomes, resource utilization, and customer satisfaction. Additionally, ABC Hospitals aims to leverage analytics to proactively identify and address potential issues, improve service quality, and enhance patient experience.

The management wants to track data of patient demographics, patient flow rate in OPD (Outpatient Department) as well as Inpatients, length of stay, bed occupancy rates, surgical turnaround times, recovery rate, mortality rate, revenue and expense data, including billing and reimbursement patterns, the financial health of each hospital unit and identify opportunities for cost savings or revenue enhancement.

They want to predict potential outbreaks or clusters of infectious diseases, enabling hospitals to implement timely interventions and preventive measures. They also want to forecast patient demand for various services and specialties, allowing hospitals to optimize staffing levels, pharmacy inventory, equipment utilization, and supply chain management.

They want to apply natural language processing (NLP) techniques to categorize and analyze unstructured text data from patient feedback and rating, allowing hospitals to identify specific areas for service improvement such as cleanliness, communication, staff behavior, treatment effectiveness and wait times.

Keeping this in view, answer the following:

a) You are assigned the duty of designing a corporate Dashboard for ABC chain of Hospitals. What KPIs, measures you would like to include in the Dashboard for the top management? Which kind of visuals would you include? 7

b) Keeping in Mind the Business Performance Management Cycle, Explain the cycle 'Plan – Monitor – Review – Reward' with reference activities of ABC Hospitals. 7

OR

a) Explain how ABC Hospitals can use Descriptive and Predictive Analytics measures for taking various decisions? 7

b) What is sentiments analysis? What kind of insights does ABC Hospitals gets from sentiment analysis of patient's feedback and ratings and what steps they can take to correct negative sentiments? 7
