

CBCS SCHEME

MMCA311C

USN

Third Semester MCA Degree Examination, Dec.2025/Jan.2026 Business Data Analytics

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.

Module – 1				M	L	C
Q.1	a.	Discuss how analytics supports decision making across different business functions such as marketing, finance, operations, and HR.	8	L2	CO1	
	b.	Provide at least one real-world business example for each type of analytics and explain the purpose it serves.	6	L2	CO1	
	c.	Explain the sources, storage challenges, and value of each type of data in business decision making.	6	L3	CO1	
OR						
Q.2	a.	Describe all six stages of CRISP-DM methodology with an example of how the method is applied in a real business analytics project.	10	L1	CO1	
	b.	Explain how organizations use BI and BA differently for reporting, trend identification, and forecasting.	5	L3	CO1	
	c.	Describe the key skills, tools, and responsibilities of a business analyst and provide two industry case examples demonstrating their role.	5	L2	CO1	
Module – 2						
Q.3	a.	Discuss data cleaning, data integration, and data transformation, highlighting why each step is essential for reliable analysis.	8	L2	CO2	
	b.	Explain at least four methods for missing values and three approaches for outliers, with examples.	7	L2	CO2	
	c.	A retail dataset shows inconsistencies such as: i. Blank entries in 'Customer Age' ii. Negative values in 'Quantity' iii. Duplicate transaction IDs. Describe how you would clean and prepare this data for further analysis.	5	L3	CO2	
OR						
Q.4	a.	Explain descriptive statistical measures such as mean, median, mode, variance, and skewness with suitable examples. Also state how these measures help in business decision-making.	8	L2	CO2	
	b.	Discuss the role of exploratory visualization techniques—Histograms, Boxplots, and Heatmaps—in uncovering business insights.	7	L2	CO2	
	c.	A company wants to segment customers based on purchase frequency, revenue contribution, and product category preference. Describe how you would use exploratory analysis to segment customers and analyze sales patterns.	5	L3	CO2	
Module – 3						
Q.5	a.	Explain Simple Linear Regression and Multiple Linear Regression with suitable business examples. Discuss assumptions, interpretation of coefficients, and when each model is appropriate.	8	L2	CO3	

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	b.	What is Logistic Regression? Describe its use in at least two business classification problems.	7	L2	CO3	
	c.	A company wants to predict customer churn using demographic and usage variables. List the steps involved in building a predictive model, from data preparation to final prediction.	5	L3	CO3	
OR						
Q.6	a.	Explain Time Series Analysis and forecasting techniques commonly used in business analytics. Describe moving averages, exponential smoothing, and ARIMA with examples.	8	L2	CO3	
	b.	Discuss model evaluation metrics: RMSE, MAE, Accuracy, Precision, and Recall.	7	L2	CO3	
	c.	A retail company wants to forecast next month's sales. Describe how you would build a forecasting model and evaluate its performance. Mention data preparation, feature selection, model choice, error calculation, and business interpretation.	5	L3	CO3	
Module – 4						
Q.7	a.	Define Prescriptive Analytics. How does it differ from Descriptive and Predictive Analytics? Explain with business examples.	8	L1	CO4	
	b.	Explain Linear Programming (LP) with its key components: Decision Variables, Objective Function, and Constraints.	7	L2	CO4	
	c.	Describe how Excel Solver can be used to implement an optimization model. Mention steps such as setting objective, selecting decision variables, and adding constraints.	5	L3	CO4	
OR						
Q.8	a.	What is Sensitivity Analysis and Scenario Analysis in optimization? Explain differences, purpose, and business relevance with examples.	8	L2	CO4	
	b.	Explain Decision Trees and Business Rules as tools for decision-making. Include use cases such as customer targeting, loan approval, or risk assessment.	7	L2	CO4	
	c.	Discuss any one business case (Resource Allocation / Pricing Model / Supply Chain Optimization) and describe how prescriptive analytics helps in making optimal decisions.	5	L3	CO4	
Module – 5						
Q.9	a.	Explain the key Principles of Data Visualization.	7	L2	CO5	
	b.	What are Dashboards? Explain the characteristics of a good dashboard and differentiate between operational, analytical, and strategic dashboards.	8	L2	CO5	
	c.	Define KPIs. How do you select and visualize KPIs effectively in a business dashboard?	5	L3	CO5	
OR						
Q.10	a.	Compare Power BI and Tableau in terms of features, connectivity, performance, cost, and use cases.	8	L3	CO5	
	b.	Explain the components involved in Designing Interactive Dashboards. Discuss slicers/filters, drill-downs, tooltips, navigation buttons, storyboards, and user experience considerations.	7	L2	CO5	
	c.	What is Data-Driven Storytelling? Describe the structure of a compelling analytical story and give an example of how insights can be communicated to business leadership.	5	L2	CO5	