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Mid Term Examinations - October 2026

Date: 05/10/2026 **Time:** 09:30 AM - 11:00 AM

Course Code: CBD3408 **Course Name:** Big Data-driven Business Intelligence

Semester: Fifth Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	56	34

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define the term "Data-Driven Organization."	2	CO1	BT2
2	Contrast the "Variety" and "Volume" characteristics of Big Data.	2	CO1	BT2
3	What is Data Integration in the context of Big Data Management?	2	CO2	BT2
4	Mention two key differences between a traditional BI Architecture and a Big Data Architecture.	2	CO1	BT2
5	Distinguish between 'Slice' and 'Dice' operations in a Data Cube.	2	CO2	BT2

PART B : Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
6	Explain the layers of a comprehensive Big Data Architecture (Ingestion, Storage, Processing, Presentation) and define the ELT process within this context. Calculate the weekly storage cost for a retail chain with 500 stores, where each store produces 2 GB of transaction data and 5 GB of video analytics data daily, given a storage cost of $0.05 per GB.	10	CO1	BT3
7	Critically analyze how Data Warehouses and Data Lakes can co-exist within a modern Business Intelligence Architecture. Discuss the Business Analytics framework (descriptive, predictive, prescriptive) and contrast how ETL and ELT processes handle data privacy and masking during transformation.	10	CO1	BT3

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	Trace the evolution of Business Intelligence triggered by the advent of Big Data. Discuss the mechanisms of business value creation in the healthcare industry and explain the critical role of a staging area in the traditional ETL process.	10	CO1	BT3
9	Detail the defining characteristics of Big Data (Volume, Velocity, Variety, Veracity) and their direct impact on BI reporting tools and Decision Support Systems. Calculate the exact total processing time in hours and minutes for an ELT pipeline processing 15,000,000 rows (Extraction: 50,000 rows/min, Loading: 100,000 rows/min, Transformation: fixed 15 minutes).	10	CO1	BT3

PART D: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT

PTO (Please Turn Over)

10	How do OLAP operations (Roll-up, Drill-down, Slice, Dice, Pivot) enhance Analytical Processing for semi-structured data? Evaluate the performance of a telecom company that started with 10,000 subscribers, acquired 2,500, and lost 1,500, by calculating the Customer Churn and Retention Rates against a strict KPI target of <10% churn.	10	CO2	BT3
11	Explain the process of data integration from disparate unstructured sources and the purpose of Data Quality Management in BI. Discuss how Spark processes iterative algorithms faster than Hadoop for continuous Business Performance Analytics.	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	Analyze the Hadoop Ecosystem by differentiating tool selection for batch processing versus querying structured BI data, and detail the lifecycle of data acquisition. For a 3D Data Cube tracking 20 Car Models, 50 Dealerships, and 4 Quarters, calculate the total cells and the resulting matrix size if a "Slice" operation is performed on a specific Quarter.	10	CO2	BT3
13	Explain the transition from traditional Decision Support Systems to automated Business Analytics frameworks. Evaluate the claim that "Business value creation in Big Data relies more on data veracity than data volume," and describe how a Data Lake supports the creation of predictive models.	10	CO1	BT3