Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code : 60018

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Fifth Semester
Computer Science and Engineering
U19ITOE7 – BUSINESS INTELLIGENCE AND ITS APPLICATIONS
(Common to EEE, ECE, BT & CST)
(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Write down the names of some software systems that support the operations of an entire organization for integrating various departments and functions.	2	K3	CO1
2.	Mention the seven categories of Baldrige business excellence framework that can improve the overall performance of an organization.	2	K1	CO1
3.	List the different stages of Business Intelligent (BI) value chain.	2	K2	CO2
4.	Recall the main stages of the ETL process and what happens during each stage.	2	K2	CO2
5.	Differentiate star schema and a snowflake schema in dimensional modelling.	2	K3	CO3
6.	Define fact table and how does it differ from a dimension table in a data warehouse.	2	K2	CO3
7.	Why report standardization is important in enterprise reporting?	2	K3	CO4
8.	What are Key Performance Indicators (KPIs) and why are they important for organizations?	2	K2	CO4
9.	How cloud computing is crucial to overcome ongoing strategic and economic uncertainties?	2	K3	CO5

10.		What are the primary data security concerns when using Mobile BI?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.			Questions	Marks	KL	CO
11.	a)		How technical information is utilized in business point of view within an organization?	13	K2	CO1
			(OR)			
	b)		What kind of digital data that can be analyzed with an organization? Define its type with example.	13	K1	CO1
12.	a)		How to choose the right approach from Ralph Kimball's Approach and W.H. Inmon's Approaches for designing and implementing data warehouses? Also compare the both approaches.	13	K3	CO2
			(OR)			
	b)		Demonstrate the best practices for integrating streaming data with batch data for hybrid data integration?	13	K3	CO2
13.	a)		How do you design a dimensional model that accommodates future changes in business requirements without requiring major redesigns? Explain.	13	K3	CO3
			(OR)			
	b)		What is the difference between OLAP and OLTP? Briefly describe when to use OLAP Vs OLTP and support your explanation with an architectural diagram.	13	K1	CO3
14.	a)	i.	Discuss the evolving role of enterprise reporting in the context of big data and real-time analytics. What are the emerging trends and challenges?	7	K2	CO4
		ii.	How can you assess the impact of poorly defined KPIs on organizational performance and suggest strategies for aligning KPIs with business objectives?	6	K3	CO4
			(OR)			
	b)	i.	Discuss how KPIs, metrics, and measures are interconnected and their collective role in shaping performance management strategies.	7	K3	CO4
		ii.	Explain the importance of a robust measurement system in ensuring the accuracy and relevance of performance data for decision-making.	6	K2	CO4

15.	a)	i.	How cloud computing reshaped the BI landscape and what are its implications for organizations regarding cost, scalability and data management?	7	K3	CO5
		ii.	How does the cloud work for private, public, and hybrid BI solutions?	6	K3	CO5
			(OR)			
	b)	i.	Examine the integration of business intelligence in ERP systems and how it improves operational efficiency and decision-making.	7	K3	CO5
		ii.	Analyze the evolution of BI mobility and its impact in enterprise decision-making processes.	6	K3	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Create a Dashboard for any one application and include Scorecard in that application. Compare Scorecard and Dashboard. Discuss the characteristics of enterprise reporting.	15	K4	CO4
		OR			
	b)	There are some case studies that show some ways BI is making a difference for companies around the world:	15 (3 each)	K6	CO2
		i. Starbucks: With 90 million transactions a week in 25,000 stores worldwide the coffee giant is in many ways on the cutting edge of using big data and artificial intelligence to help direct marketing, sales and business decisions. Through its popular loyalty card program and mobile application, Starbucks owns individual purchase data from millions of customers. Using this information and BI tools, the company predicts purchases and sends individual offers of what customers will likely prefer via their app and email. This system draws existing customers into its stores more frequently and increases sales volumes. The same intel that helps Starbucks suggest new products to try also helps the company send personalized offers and discounts that go far beyond a special birthday discount. Additionally, a customized email goes out to any customer who hasn't visited a Starbucks recently with enticing offers—built from that individual's purchase history—to re-engage them.			
		ii. Netflix: The online entertainment company's 148 million subscribers give it a massive BI advantage. Netflix has digitized its interactions with its 151 million subscribers. It collects data from each of its users and with the help of data analytics understands the behavior of subscribers			

and their watching patterns. It then leverages that information to recommend movies and TV shows customized as per the subscriber's choice and preferences.

As per Netflix, around 80% of the viewer's activity is triggered by personalized algorithmic recommendations. Where Netflix gains an edge over its peers is that by collecting different data points, it creates detailed profiles of its subscribers which helps them engage with them better.

The recommendation system of Netflix contributes to more than 80% of the content streamed by its subscribers which has helped Netflix earn a whopping one billion via customer retention. Due to this reason, Netflix doesn't have to invest too much on advertising and marketing their shows. They precisely know an estimate of the people who would be interested in watching a show.

iii. Coca-Cola: Coca Cola is the world's largest beverage company, with over 500 soft drink brands sold in more than 200 countries. Given the size of its operations, Coca Cola generates a substantial amount of data across its value chain – including sourcing, production, distribution, sales and customer feedback which they can leverage to drive successful business decisions.

Coca Cola has been investing extensively in research and development, especially in AI, to better leverage the mountain of data it collects from customers all around the world. This initiative has helped them better understand consumer trends in terms of price, flavors, packaging, and consumer' preference for healthier options in certain regions.

With 35 million Twitter followers and a whopping 105 million Facebook fans, Coca-Cola benefits from its social media data. Using AI-powered image-recognition technology, they can track when photographs of its drinks are posted online. This data, paired with the power of BI, gives the company important insights into who is drinking their beverages, where they are and why they mention the brand online. The information helps serve consumers more targeted advertising, which is four times more likely than a regular ad to result in a click.

Coca Cola is increasingly betting on BI, data analytics and AI to drive its strategic business decisions. From its innovative free style fountain machine to finding new ways to engage with customers, Coca Cola is well-equipped to remain at the top of the competition in the future. In a new digital world that is increasingly dynamic, with changing customer behavior, Coca Cola is relying on Big Data to gain and maintain their competitive advantage.

iv. American Express GBT

The American Express Global Business Travel company, popularly known as Amex GBT, is an American multinational travel and meetings programs management corporation which operates in over 120 countries and has over 14,000 employees.

Challenges:

Scalability – Creating a single portal for around 945 separate data files from internal and customer systems using the current BI tool would require over 6 months to complete. The earlier tool was used for internal purposes and scaling the solution to such a large population while keeping the costs optimum was a major challenge

Performance – Their existing system had limitations shifting to Cloud. The amount of time and manual effort required was immense

Data Governance – Maintaining user data security and privacy was of utmost importance for Amex GBT

Solution:

The company was looking to protect and increase its market share by differentiating its core services and was seeking a resource to manage and drive their online travel program capabilities forward. Amex GBT decided to make a strategic investment in creating smart analytics around their booking software.

The solution equipped users to view their travel ROI by categorizing it into three categories cost, time and value. Each category has individual KPIs that are measured to evaluate the performance of a travel plan.

Results:

Reducing travel expenses by 30%

Time to Value – Initially it took a week for new users to be on-boarded onto the platform. With Premier Insights that time had now been reduced to a single day and the process had become much simpler and more effective.

Savings on Spends – The product notifies users of any available booking offers that can help them save on their expenditure. It recommends users of possible saving potential such as flight timings, date of the booking, date of travel, etc.

Adoption – Ease of use of the product, quick scale-up, real-time implementation of reports, and interactive dashboards of Premier Insights increased the global online adoption for Amex GBT

v. Airline Solutions Company: BI Accelerates Business InsightsAirline Solutions provides booking tools, revenue management, web, and mobile itinerary tools, as well as other technology, for airlines, hotels and other companies in the travel industry.

Challenge: The travel industry is remarkably dynamic and fast paced. And the airline solution provider's clients needed advanced tools that could provide real-time data on customer behavior and actions.

Solution:

They developed an enterprise travel data warehouse (ETDW) to hold its enormous amounts of data. The executive dashboards provide near real-time insights in user-friendly environments with a 360-degree overview of business health, reservations, operational performance and ticketing.

Results:

The scalable infrastructure, graphic user interface, data aggregation and ability to work collaboratively have led to more revenue and increased client satisfaction.

Answer the following question based on case study:

a. How do these companies use BI to gain a competitive advantage?
b. What are the key challenges and opportunities faced by these organizations in leveraging BI?
c. How do these companies measure the ROI (Return on Investment) of their BI initiatives?
d. What are the challenges in managing the large volume of customer data collected by Starbucks? How does Netflix ensure the accuracy of its recommendation algorithm?
e. What are the benefits of using a cloud-based BI platform for travel management? What are the challenges in integrating data from multiple sources within the travel industry?