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BTECH
(SEM V) THEORY EXAMINATION 2024-25
INTRODUCTION TO DATA ANALYTICS AND VISUALIZATION

TIME: 3 HRS

M.MARKS: 70

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1. Attempt all questions in brief. 2 x 07 = 14

Q no.	Question	CO	Level
a.	What are the challenges and solutions associated with scaling analytics in modern organizations?	1	K ₃
b.	How do modern tools bridge the gap between analysis and reporting?	1	K ₃
c.	Compare and contrast Bayesian modeling with neural networks in terms of their applications.	2	K ₃ , K ₄
d.	How do linear and nonlinear dynamics influence the accuracy of predictions?	2	K ₃ , K ₄
e.	Analyze the challenges of real-time sentiment analysis.	3	K ₂ , K ₃
f.	How do methods like CLIQUE and ProCLUS overcome traditional clustering limitations?	4	K ₂ , K ₄
g.	What are the trade-offs between static and dynamic visualizations?	5	K ₂ , K ₃

SECTION B

2. Attempt any three of the following: 07 x 3 = 21

a.	Describe the key characteristics of Big Data. How do these characteristics necessitate the development of advanced analytics platforms?	1	K ₃
b.	Explain the concept of rule induction in data mining. How is it used to derive meaningful patterns from datasets?	2	K ₃ , K ₄
c.	Describe the concept of decaying windows in stream analytics. How does it help in managing memory and computational resources?	3	K ₂ , K ₃
d.	Compare and contrast hierarchical clustering and K-means clustering. What are the advantages and disadvantages of each?	4	K ₂ , K ₄
e.	Discuss the importance of figure captions in visual interfaces. How do they enhance the interpretability of data visualizations?	5	K ₂ , K ₃

SECTION C

3. Attempt any one part of the following: 07 x 1 = 07

a.	How has the need for data analytics evolved with the advent of IoT and real-time systems? Provide relevant examples.	1	K ₃
b.	Define the term 'analytic lifecycle.' How do the roles of stakeholders vary across its different phases?	1	K ₃

4. Attempt any one part of the following: 07 x 1 = 07

a.	Critically analyze the challenges of multivariate analysis in high-dimensional datasets. How can these challenges be addressed?	2	K ₃ , K ₄
b.	How do stochastic search methods differ from deterministic optimization techniques? Provide use cases for each.	2	K ₃ , K ₄



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BTECH**(SEM V) THEORY EXAMINATION 2024-25****INTRODUCTION TO DATA ANALYTICS AND VISUALIZATION****TIME: 3 HRS****M.MARKS: 70****5. Attempt any one part of the following: 07 x 1 = 07**

a.	Discuss the role of Real-Time Analytics Platforms (RTAP) in modern enterprises. Provide a case study to support your explanation.	3	K ₂ , K ₃
b.	Describe the steps involved in building a real-time stock market prediction system using stream analytics. What are the key considerations?	3	K ₂ , K ₃

6. Attempt any one part of the following: 07 x 1 = 07

a.	What is parallelism in clustering algorithms? How does it improve performance in handling large datasets?	4	K ₂ , K ₄
b.	How is clustering applied to streaming data? Discuss the modifications needed in traditional clustering algorithms for stream analytics.	4	K ₂ , K ₄

7. Attempt any one part of the following: 07 x 1 = 07

a.	Explain the concept of navigation links in data visualization. How do they improve user interaction with complex datasets?	5	K ₂ , K ₃
b.	Explain the role of human vision in designing effective data visualizations. How do space and time limitations influence this process?	5	K ₂ , K ₃