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**Question Paper Code:U8307S**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Professional Elective

Information Technology

21ITV307-STREAM PROCESSING

(Common to CSBS)

(Regulation 2021)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 2 = 20 Marks)

1. Define data management strategy. CO1-U
2. Write the benefits of data as a service. CO1-U
3. List out the three main components in Lambda Architecture. CO1-U
4. What are the Key components include in Real-time Analytics? CO1-U
5. List out the Benefits and Weaknesses in the Relational Model. CO1-U
6. Define SPARQL. CO1-U
7. Name various components of Kafka. CO1-U
8. List out the traditional methods of message transfer. CO1-U
9. Can you change the schema of a streaming data frame during processing? CO1-U
10. State the types of Time windows CO1-U

PART – B (5 x 16= 80 Marks)

11. (a) Discuss in detail about challenges and solution for integrating stream processing systems with various data sources and sinks? CO1-U (16)  
Or  
(b) Explain Data Management Strategy and list the application of Data Management Strategy. CO1-U (16)
12. (a) A smart city initiative aims to manage traffic flow using real-time data from thousands of sensors. What strategies can be implemented to process and apply this data in real-time to provide immediate traffic management solutions and prevent congestion? CO2-App (16)

Or

- (b) A social media platform aims to provide personalized content recommendations based on real-time user interactions. Illustrate how the platform process user interactions in real-time to continuously update and refine content recommendations for each user? CO2-App (16)
13. (a) Explain the different types in NoSQL with a neat diagram. CO1-U (16)
- Or
- (b) Explain the Benefits of Standardization of Graph Query Languages CO1-U (16)
14. (a) Discuss in detail about CO1-U (16)
- (i) Kafka Topic (8)
- (ii) Kafka Broker (8)
- Or
- (b) Give brief notes on Important Server concepts in Apache kafka CO1-U (16)
15. (a) Explain Handling Event-time and Late Data in stream processing. CO1-U (16)
- Or
- (b) Discuss the types of Time Windows with characteristics tools. CO1-U (16)