Reg. No. : | | | | | | | | | | | | |

Question Paper Code:U8307

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Professional Elective

21ITV307 - STREAM PROCESSING

Computer Science and Business systems

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Define data processing	CO1- U
2.	Define data management strategy?	CO1-U
3.	Define Stream Processor	CO1-U
4.	What are the Key components include in Real-time Analytics?	CO1-U
5.	Define NoSQL.	CO1- U
6.	Define SPARQL.	CO1- U
7.	List the role of the offset.	CO1- U
8.	List the consumers in Kafka.	CO1- U
9.	Compare Stream Processing and Batch Processing	CO2- App
10.	Can you change the schema of a streaming data frame during processing?	CO 2-App

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 the most effective strategies for handling and processing large-scale streaming data from diverse sources?	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)	An IOT network in a manufacturing plant needs to monitor equipment performance and predict failures in real-time. How will you apply the plant implement a real-time data processing system that not only monitors equipment status but also predicts potential failures before they occur?	CO2- App	(16)
13.	(a)	Explain the Benefits of Standardization of Graph Query Languages.	CO1- U	(16)
		Or		
	(b)	Explain working of Document Data Model with their features and application.	CO1- U	(16)
14.	(a)	Apply buffer. Memory and batch. size configurations in the Kafka Producer API impact performance and resource usage in Kafka producer.	CO2- App	(16)
		Or		
	(b)	Design a system where multiple Consumer APIs interact with a single Producer API? What considerations must be taken into account?	CO2- App	(16)
15.	(a)	Explain the overview of common operations performed on streaming data.	CO1- U	(16)
		Or		
	(b)	Explain Join Operations in Stream Processing with their types.	CO1- U	(16)