R22 Regulation *Subject code: 4E7GB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VII Semester Supplementary Examinations, May 2026

BIG DATA ANALYTICS

(CSE (AI&ML))

Maximum Marks: 60 Date:07.05.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	BTL
1.a)	What are the main characteristics of Big Data?	1M	1	L1
b)	Give two examples of Big Data visualization tools.	1M	1	L1
c)	What are Big Data architectural design patterns?	1M	2	L1
d)	What are the main layers of Lambda Architecture?	1M	2	L1
e)	List two key considerations in data acquisition.	1M	3	L1
f)	What is Apache Spark used for?	1M	3	L3
g)	Mention any two key features of Apache Pig.	1M	4	L1
h)	Give one example of a real-world batch analysis application.	1M	4	L2
i)	Give two examples of NoSQL databases.	1M	5	L2
j)	What is the role of Django in web development?	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2 a)	List and explain any two domain-specific examples of Big Data applications.	5	1	L1
b)	Discuss the challenges and opportunities in handling and analyzing Big Data.	5		L1
	OR			
3 a)	construct the complete Analytics Flow for Big Data with a neat diagram.	5	1	L3
b)	Elaborate on the role and importance of visualization in Big Data Analytics.	5		L2
4 a)	Explain the Scheduler Agent Supervisor pattern and its significance in distributed data processing.	5	2	L2
b)	Describe the Pipes and Filters architectural pattern with its benefits in data processing pipelines.	5		L2
	OR			
5 a)	Explain the Leader Election pattern with an example of its implementation in a cluster.	5	2	L2

b)	Describe the CAP theorem and explain its implications for Big Data architecture design.	5		L2
6 a)	Discuss various considerations involved in Big Data Acquisition with real-world examples.	5	3	L2
b)	Discuss the data flow process in HDFS with an appropriate diagram.	5		L2
	OR			
7 a)	Describe the Publish–Subscribe messaging framework and its advantages in Big Data systems.	5	3	L3
b)	Explain how SCALA supports functional programming in Big Data analytics.	5		L2
8 a)	Discuss the working principles of the Map and Reduce functions with an example.	5	4	L2
b)	Discuss the role of Apache Oozie in workflow scheduling for Hadoop-based systems.	5		L2
	OR			
9	Compare and contrast the batch analysis capabilities of Hadoop, Pig, and Spark.	10	4	L2
10a)	Explain the Model-View-Template (MVT) architecture of Django with a neat diagram.	5	5	L2
b)	Discuss the features and advantages of using Django for developing Python-based web applications.	5		L2
	OR			
11.	Describe the process of connecting a Django application to a database and performing CRUD operations.	10	5	L2