(T) Roll No. .....

PAPER ID—11166

B. Tech. EXAMINATION, 2024

(Fifth Semester)

ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Big Data Analytics

Time : 3 *Hours* *Maximum Marks :* 70

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1. Answer all parts : 7×2=14

(a) Define Big Data and list its key characteristics.

(b) What are the 3 Vs of Big Data ? Provide examples for each.

(c) Differentiate between Business Intelligence and Big Data.

(d) What is the CAP Theorem in Big Data Analytics ?

(e) Explain the function of a Mapper in the MapReduce framework.

(f) What are the differences between SQL and NoSQL databases ?

(g) Define the term 'Keyspace' in Cassandra.

Unit I

2. (a) Discuss the evolution of Big Data and its key applications. 7

(b) Explain the challenges associated with Big Data and its workflow management. 7

3. What are the different types of digital data ? Explain their characteristics and provide examples for each type. 14

Unit II

4. Differentiate between SQL and Hadoop. Discuss the advantages of using Hadoop to process big data over traditional SQL-based systems. 14

5. (a) Discuss the classification of analytics in Big Data and its relevance to Data Science. 7

   (b) Describe the features and advantages of Hadoop ecosystems. 7

Unit III

6. (a) Write short notes on the following in MongoDB : 7

   (i) CRUD operations

   (ii) Aggregation framework.

(b) Describe the use of indexes in Mongo DB and explain, how Mongo import and exports work. 7

7. (a) Explain the role of the Mapper, Reducer, Combiner, and Partitioner in MapReduce. 7

(b) Differentiate between SQL and NoSQL databases. Discuss the types of NoSQL databases and their advantages. 7

Unit IV

8. (a) What are the features and data types of Cassandra ? Explain with examples. 7

(b) How does Cassandra handle collections, counters and TTL ? Provide examples. 7

9. Explain CRUD operations in Cassandra. Write and explain CQL queries to create, read, update and delete data in a table with suitable examples. 14