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

Question Paper Code: R2E04

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

Second Semester

Artificial Intelligence and Data Science

R21UAD204- FOUNDATION OF DATA SCIENCE

(Regulations R2021)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (5x 1 = 5 Marks)

1. R language has superficial similarity with _____ CO1-U

(a) RStudio b) Java c) MATLAB d) SAS

2. CLARA stands for _____ CO1- U

(a) clustering random area

(b) clustering large application

(c) clustering large applications based on randomized

(d) clustering application randomized area

3. The total forms of big data is ____ CO1- U

(a) 1 (b) 2 (c) 3 (d) 4

4. What was Hadoop named after? CO1- U

(a) Creator DougCutting‟s favoritecircus act

(b) Cutting‟s highschool rock band

(c) The toy elephant of Cutting‟s son

(d) A sound Cutting‟s laptopmade during Hadoop development

5. Which of the following is true about Hadoop? CO1- U

(a) It is a distributeddata processing framework.

(b) It is a real-timeprocessing system.

(c) It can only process structured data.

(d) It is a database management system

PART – B (5 x 3= 15 Marks)

6. Write an R program to print sum of „n“ numbers. CO2- App

7. What is K-Means? CO1- U

8. List out the components of Hadoop. CO1- U

9. What is meant by anatomy of READ? CO1- U

10. Write an R Program for Char Count. CO2- App

PART – C (5 x 16= 80 Marks)

11. (a) Explain packages in R with neat explanation. CO1- U (16)

Or

(b) Explain briefly about Decision making and loop structures with syntax and example. CO1- U (16)

12. (a) Apply K-Means algorithm for the following data set and find theclusters for the data set.
(3, 5), (4, 4), (3, 4), (4, 5), (6, 8), (7, 9), (6, 9), (8, 8), (10, 10),(9, 9) Where k=2. CO2- App (16)

Or

(b) Apply naïve bayes theorem for the following: Problem: If the animals can be a pet or not? CO2- App (16)

	Animals	Size of Animal	Body Color	Can we Pet them
0	Dog	Medium	Black	Yes
1	Dog	Big	White	No
2	Rat	Small	White	Yes
3	Cow	Big	White	Yes
4	Cow	Small	Brown	No
5	Cow	Big	Black	Yes
6	Rat	Big	Brown	No
7	Dog	Small	Brown	Yes
8	Dog	Medium	Brown	Yes
9	Cow	Medium	White	No
10	Dog	Small	Black	Yes
11	Rat	Medium	Black	No
12	Rat	Small	Brown	No
13	Cow	Big	White	Yes

13.	(a)	Explain the Big data characteristics and its applications.	CO1- U	(16)
		Or		
	(b)	Illustrate Hadoop and its components in detail.	CO1- U	(16)
14.	(a)	Describe HDFS architecture with neat diagram.	CO1- U	(16)
		Or		
	(b)	Define YARN architecture with neat diagram.	CO1- U	(16)
15.	(a)	What is the difference between a Mapper and a Reducer in Map Reduce? Describe the key tasks performed by each component and their roles in processing and analyzing data in Hadoop.	CO1- U	(16)
		Or		
	(b)	What is Hive in Hadoop and how does it enable data warehousing and SQL-based data processing? Describe the key features of Hive	CO1- U	(16)