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Question Paper Code: R2E04

B.E./B.Tech. DEGREE EXAMINATION, APRIL 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)

- Which of the following is used for Statistical analysis in R Language? CO1-U
(a) RStudio (b) Studio (c) Heck (d) KStudio
- 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
- Data in ___bytes size is called big data CO1- U
(a) Mega (b) Tera (c) Giga (d) Peta
- What was Hadoop named after? CO1- U
(a) Creator DougCutting's favorite circus act
(b) Cutting's highschool rock band
(c) The toy elephant of Cutting's son
(d) A sound Cutting's laptop made during Hadoop development

5. Which of the following is true about Hadoop? CO1- U
- (a) It is a distributed data processing framework.
 - (b) It is a real-time processing system.
 - (c) It can only process structured data.
 - (d) It is a database management system

PART – B (5 x 3= 15 Marks)

6. Explain any two R data types with example. CO1- U
7. Define hierarchical clustering with neat diagram. CO1- U
8. Define Big Data. CO1- U
9. Define HDFS. CO1- U
10. What is Sqoop import and export? CO1- U

PART – C (5 x 16= 80 Marks)

11. (a) Write an R Program to implement Arrays, Data frames and matrices with syntax and example program. CO2- App (16)

Or

- (b) Write an R Program to implement operators with syntax and example program. CO2- App (16)

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

Or

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

	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) Brief about Apache Hadoop architecture with suitable diagram. CO1- U (16)
- Or
- (b) Summarize Big data and its applications 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) Explain the role of Map Reduce in Hadoop. Describe the key phases of a Map Reduce job, such as map, shuffle, and reduce, and their roles in processing data in parallel across a Hadoop cluster. CO1- U (16)
- Or
- (b) Discuss in detail about the Pig and Hive architecture with neat Diagram. CO1- U (16)

