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| <b>Satyug Darshan Institute of Technology, Faridabad</b>          |                                                           |                                   |
| <b>Programme: BCA DS</b>                                          |                                                           | <b>Year:/Semester:3rd/5th</b>     |
| <b>Subject Name : Data Acquisition Analysis and Visualization</b> |                                                           | <b>Subject Code:BCA-DS-23-303</b> |
| <b>Prepared By: Dr. Deepti Goyal</b>                              |                                                           | <b>AY-2025-2026</b>               |
| <b>Unit -1</b>                                                    |                                                           |                                   |
| <b>Short Questions</b>                                            |                                                           |                                   |
| <b>S. No.</b>                                                     | <b>Questions</b>                                          | <b>Bloom Taxonomy</b>             |
| 1                                                                 | Define Big Data.                                          | KL1                               |
| 2                                                                 | List the characteristics of Big Data.                     | KL1                               |
| 3                                                                 | What are the sources of Big Data?                         | KL1                               |
| 4                                                                 | Differentiate structured and unstructured data.           | KL2                               |
| 5                                                                 | Give examples of Big Data applications.                   | KL2                               |
| 6                                                                 | What is data integration?                                 | KL1                               |
| 7                                                                 | Define Hadoop.                                            | KL1                               |
| 8                                                                 | Explain the role of open-source technologies in Big Data. | KL2                               |
| 9                                                                 | What is NoSQL?                                            | KL1                               |
| 10                                                                | Explain aggregate data models.                            | KL2                               |
| <b>Long Questions</b>                                             |                                                           |                                   |
| 1                                                                 | Explain Big Data and its characteristics.                 | KL2                               |
| 2                                                                 | Discuss types and sources of Big Data with examples.      | KL3                               |
| 3                                                                 | Explain Big Data technologies and their functions.        | KL3                               |
| 4                                                                 | Analyze the need for integrating diverse data.            | KL4                               |
| 5                                                                 | Explain Hadoop architecture.                              | KL2                               |
| 6                                                                 | Compare RDBMS and NoSQL databases.                        | KL4                               |
| 7                                                                 | Explain Big Data ecosystem with diagram.                  | KL3                               |
| 8                                                                 | Analyze challenges in Big Data management.                | KL4                               |
| 9                                                                 | Explain aggregate data models in Big Data.                | KL2                               |
| 10                                                                | Discuss real-life applications of Big Data.               | KL3                               |
| <b>Unit -2</b>                                                    |                                                           |                                   |
| <b>Short Questions</b>                                            |                                                           |                                   |
| <b>S. No.</b>                                                     | <b>Questions</b>                                          | <b>Bloom Taxonomy</b>             |
| 1                                                                 | Define Data Science.                                      | KL1                               |
| 2                                                                 | What is Big Data strategy?                                | KL1                               |
| 3                                                                 | List the components of Data Science.                      | KL1                               |
| 4                                                                 | Explain the Five P's of Data Science.                     | KL2                               |
| 5                                                                 | What is data ingestion?                                   | KL1                               |
| 6                                                                 | Explain data storage in Big Data.                         | KL2                               |
| 7                                                                 | What is data quality?                                     | KL1                               |
| 8                                                                 | Define data scalability.                                  | KL1                               |
| 9                                                                 | Explain data security.                                    | KL2                               |
| 10                                                                | List steps in the Data Science process.                   | KL1                               |
| <b>Long Questions</b>                                             |                                                           |                                   |
| 1                                                                 | Explain how organizations can get value out of Big Data.  |                                   |
| 2                                                                 | Explain how value is derived from Big Data.               | KL2                               |
| 3                                                                 | Describe steps to build an effective Big Data strategy.   | KL3                               |
| 4                                                                 | Explain the Five Components of Data Science.              | KL2                               |
| 5                                                                 | Apply the Five P's of Data Science to an organization.    | KL3                               |
| 6                                                                 | Explain data ingestion and storage techniques.            | KL3                               |
| 7                                                                 | Analyze data quality and operational challenges.          | KL4                               |
| 8                                                                 | Explain scalability issues in Big Data systems.           | KL2                               |
| 9                                                                 | Analyze Big Data security challenges.                     | KL4                               |
| 10                                                                | Explain real-world Big Data management applications.      | KL3                               |
|                                                                   | Analyze Big Data strategy for an enterprise.              | KL4                               |
| <b>Unit -3</b>                                                    |                                                           |                                   |

| Short Questions |                                                    |                |
|-----------------|----------------------------------------------------|----------------|
| S. No.          | Questions                                          | Bloom Taxonomy |
| 1               | Define data acquisition.                           | KL1            |
| 2               | What is real-time data acquisition?                | KL1            |
| 3               | Define transducer.                                 | KL1            |
| 4               | Explain instrumentation system.                    | KL2            |
| 5               | List types of instrumentation systems.             | KL1            |
| 6               | Define Data Acquisition System (DAS).              | KL1            |
| 7               | What is signal conditioning?                       | KL2            |
| 8               | Define ADC.                                        | KL1            |
| 9               | Explain sample and hold circuit.                   | KL2            |
| 10              | What is a data logger?                             | KL1            |
| Long Questions  |                                                    |                |
| 1               | Explain real-time data acquisition system.         | KL2            |
| 2               | Describe transducers used in DAS.                  | KL2            |
| 3               | Explain instrumentation system with block diagram. | KL3            |
| 4               | Explain the working of Data Acquisition System.    | KL3            |
| 5               | Analyze the role of signal conditioners.           | KL4            |
| 6               | Explain ADC and sample-and-hold circuits.          | KL2            |
| 7               | Design a pressure measurement system using DAS.    | KL3            |
| 8               | Design a temperature measurement system using DAS. | KL3            |
| 9               | Analyze DAS for intelligent instrumentation.       | KL4            |
| 10              | Explain applications of data loggers.              | KL2            |
| Unit -4         |                                                    |                |
| Short Questions |                                                    |                |
| S. No.          | Questions                                          | Bloom Taxonomy |
| 1               | Define data analysis.                              | KL1            |
| 2               | What is classification?                            | KL1            |
| 3               | Define regression.                                 | KL1            |
| 4               | Explain clustering.                                | KL2            |
| 5               | What is association analysis?                      | KL1            |
| 6               | Explain graph analysis.                            | KL2            |
| 7               | Define MapReduce.                                  | KL1            |
| 8               | What is mapper?                                    | KL1            |
| 9               | What is reducer?                                   | KL1            |
| 10              | Explain MapReduce workflow.                        | KL2            |
| Long Questions  |                                                    |                |
| 1               | Explain data analysis techniques.                  | KL2            |
| 2               | Apply classification techniques to a dataset.      | KL3            |
| 3               | Explain regression analysis with example.          | KL2            |
| 4               | Apply clustering techniques for Big Data.          | KL3            |
| 5               | Analyze results of association analysis.           | KL4            |
| 6               | Analyze applications of graph analysis.            | KL4            |
| 7               | Explain MapReduce programming model.               | KL2            |
| 8               | Apply MapReduce workflow to a Big Data problem.    | KL3            |
| 9               | Analyze the anatomy of a MapReduce job run.        | KL4            |
| 10              | Analyze classic MapReduce applications.            | KL4            |
|                 |                                                    |                |