## UNIT 1

| Q1 | What is Data Science ? What are its applications? |
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| Q2 | What are the different types of Data in Data Science? Explain |
| Q3 | What is the role of Linear algebra in Data Science ? |
| Q4 | Define Vector and Matrix |

## UNIT 2

| Q1 | Difference Between Descriptive Statistics & Inferential Statistics |
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| Q2 | What is Sampling ? What are different Sampling Techniques ? |
| Q3 | Explain hypothesis testing.with its types. |
| Q4 | Write a short note on Confidence Interval |
| Q5 | Explain  following terms:<br>Random variable, Mean, Median , Mode , Variance, Covariance, Covariance Matrix and Correlation. |
| Q6 | Write a short note on Probability Distribution and its types |
| Q7 | What is Hypothesis? Why do we need to reject the Null Hypothesis? |
| Q8 | What is probability ? What are the different types of Probability ? |
| Q9 | Discuss inferential statistics in data analysis. |
| Q10 | Define Statistics and Probability. Explain its types and terminology in details |
| Q11 | Describe Correlation. Generate one table including data of 10 student's enrolment number and one subject marks and calculate Correlation |

## Unit 3

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| Q1 | What is Machine Learning Optimization ? Why to optimize machine learning models? |
| Q2 | What is Optimization ? What are the different components required for solving real world problems ? |
| Q3 | Write a short note on Gradient Descent |
| Q4 | What is Gradient Descent ? How does the Gradient Descent Algorithm work? |
| Q5 | Name the different Optimization Problems. Explain any one. |
| Q6 | What is the importance of Maxima and Minima in optimization ? |
| Q7 | What is learning rate and what is its significant in learning the parameters? |

## UNIT 4

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| Q1 | What is Machine Learning ? What are the different types of Machine Learning Models? |
| Q2 | Difference between Classification and Clustering |
| Q3 | Difference between Eager and Lazy Learner. |
| Q4 | Write a short note on Nearest Neighbor Analysis |
| Q5 | Briefly discuss KNN algorithm with its pros and cons. |
| Q6 | Illustrate the steps of KNN algorithm with proper example |
| Q7 | Describe KNN & ANN algorithm. And also the reason why we used NN algorithm in data analysis |
| Q8 | Describe NN analysis. Explain difference between ANN and KNN algorithm. |
| Q9 | Express how Decision Making is useful for visualization of data. Explain with its steps. |
| Q10 | What is Regression ? Explain different types of Regression |

| Q 11 | Difference between Simple Regression and Multiple Linear Regression |
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| Q13 | Explain the different Evaluation Metrics used for Classification ? |
| Q14 | Explain the different Evaluation Metrics used for Regression ? |
| Q15 | What is Confusion Metric ? Explain all its metrics |
| Q16 | What is feature selection? Why is it needed? What are the different approaches of feature selection, briefly explain any one. |
| Q17 | Name the different distance metrics used in machine learning ? Explain any one in detail. |
| Q18 | What are the assumptions of linear regression? |

## Unit 5

| Q1 | What is Clustering Algorithm ? What are its types ? List the applications of clustering algorithms. |
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| Q2. | What is Partitioning Based clustering ? What are its types ? |
| Q3 | What is the K-Means Clustering Algorithm ? What are the steps involved in the K-Means Clustering algorithm ? |
| Q4 | What is the K-Medoid Clustering Algorithm ?  What are the steps involved in the K-Medoid Clustering algorithm ? |
| Q5 | What are the advantages and disadvantages of K  Means Clustering Algorithm ? |
| Q6 | Difference between K Means and K Medoids algorithm. |
| Q7 | What is DBSCAN Clustering? What are the steps involved in DBSCAN Algorithm |
| Q8 | List out the Input parameters given to the DBSCAN Algorithm. |
| Q9 | Write a short note on KDE |
| Q10 | What is Hierarchical Clustering ? Explain its types. |
| Q11 | Write a short note on Hierarchical clustering algorithms |

## Unit 6

| Q1 | What is Data Visualization ? Why is it preferred in Organisation? |
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| Q2 | Difference between Module and Library ? |
|----|------|
| Q3 | What are the different libraries for visualization in python ? |
| Q4 | What are the different plots drawn using matplotlib ? Write the syntax of each |
| Q5 | Write a short note on Data visualization using python. |