

UNIT-01

1. Explain the term mean, weighted mean, median, variance and standard deviation in detail.
2. What is Numpy? Explain with example array indexing and slicing using Numpy.
3. Write and explain various universal functions supported by Numpy library.
4. Explain the concept of broadcasting functionality with example?
5. What are the rules of broadcasting? Explain all the rules with example.
6. How pandas library is useful in DSS? Explain series object in detail.
7. How pandas library is useful in DSS? Explain dataframe object in detail.
8. How pandas library is useful in DSS? Explain how index object can be used as index set in detail.
9. What causes missing data? Explain how to drop column with missing values and input missing values with example?
10. Explain hierarchical indexing?
11. Explain how concat and append function can be used for combining dataset?
12. What is join? Explain various types of join with example?
13. Explain with example many to one join using merge function.
14. Explain with example one to many join using merge function.
15. Explain with example many to many join using merge function.
16. Explain split, apply and combine operation with example.
17. How pivot tables are useful? Write its syntax and explain how it handles multidimensional aggregation.

UNIT-02

1. What is matplotlib and seaborn in python? How to use it for plotting a graph?
2. Explain the pyplot method of matplotlib library with various parameters of it?
3. Explain how to label a plot using titles, axis labels(x label & y label) and legend label with example?
4. What is the use of scatter plot method? Also explain when to use plt.plot() and when to use plt.scatter() method?
5. Explain how to display three dimensional data in two dimensions using contours or color coded regions.
6. Explain how to plot a histogram using various functions of matplotlib library?
7. What is sampling? What are various types of sampling?
8. Explain random sampling with its advantages and various types?
9. What is normal distribution? What are its properties? Also explain the empirical rule.
10. Explain binomial distribution with example?
11. Explain poisson's distribution in detail?

UNIT-03

1. What is hypothesis? Explain null and alternative hypothesis with example?
2. What is level of significance and level of confidence explain with example?
3. What is hypothesis? Explain how to test hypothesis using one tail test?
4. Explain how to test hypothesis using two tailed test ?
5. What is P-Value? Explain how it supports to accept or reject the null hypothesis?
6. Explain Type I and Type II Error?
7. Differentiate between Type I and Type II error.
8. What is degree of freedom? Explain with example.
9. Explain how one sample Z –test is performed?
10. Explain one sample t-test?
11. Explain two sample t-test?
12. Explain Chi-Square test?
13. Explain Anova test and when to use it?
14. In the population, the average IQ is 100 with a standard deviation of 15. A team of scientist wants to test a new medication to see if it has either a positive or negative effect on intelligence or no effect at all. A sample of 30 who have taken the medication has a mean of 140. Did the medication affect intelligence?

UNIT-04

1. What is machine learning? Explain types of machine learning?
2. Explain supervised and unsupervised machine learning?
3. Differentiate between supervised and unsupervised machine learning algorithm?
4. What is machine learning? What are its application and uses?
5. Explain train-test and split technique of model validation in machine learning?
6. Explain cross validation technique of model validation in machine learning?
7. What is regression? Explain types of regression?
8. Explain simple and multi linear regression?
9. Explain the assumptions of regression?
10. What is the line of Best fit?
11. Explain cost function in linear regression?

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UNIT-05

1. Explain how logistic response function and logit is useful for logistic regression?
2. How to predict values form logistic function using logistic response function?
3. Explain interpreting the coefficient and understanding odd ratio in logistic regression?
4. Explain how confusion matrix is used for evaluating a classification model?
5. Explain the term precision, recall and specificity used in classification?
6. Explain how ROC curve is useful in machine learning classification?
7. Explain how AUC curve is useful in machine learning classification?

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UNIT-06

1. What is decision tree algorithm? Explain how it works?(
<https://www.javatpoint.com/machine-learning-decision-tree-classification-algorithm>)
2. What are the advantages and disadvantages of decision tree algorithm?
3. Explain recursive partitioning algorithm?
4. Explain how to measure homogeneity or impurity?
5. What is random forest algorithm? Explain how it works.
(<https://www.javatpoint.com/machine-learning-random-forest-algorithm>)

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