NARAYANA ENGINEERING COLLEGE::NELLORE
AUTONOMOUS

DEPARTMENT OF MCA

Class : I MCA - IISEM **Academic Year :2023-24**
Course Title : FOUNDATIONS OF DATA SCIENCE(21MC203)
Faculty: Mr. B. Samuel John Peter **Branch: MCA**

MODEL QUESTION BANK

Module – I: Introduction to Probability and Statistics

S.NO	QUESTIONS	CO	BL	MARKS
1.	a) Explain briefly about mean, median and mode. b) Describe a python program to find mean, median and mode of given data.	1	1	6 6
2.	Describe a python program to find harmonic mean and geometric mean of given data.	1	1	12
3.	What is mean deviation? Explain types with an example.	1	1	12
4.	a) Explain about standard deviation and variance of measures of dispersion. b) Describe a python to find standard deviation and variance of given data.	1	2	6 6
5.	a) Explain briefly about hypothesis testing and random variable. b) Explain about basics of probability.	1	2	6 6
6.	Explain about the probability distributions: Bernoulli, Binomial, Poisson.	1	2	12
7.	a) What is Gaussian distribution? Implement Gaussian probability distribution in python. b) What is exponential distribution? Implement exponential distribution in python.	1	1	6 6
8	a) What Is data science, How does data science relate to other fields? b) What is Chi – square distribution. Implement Chi – square probability distribution in python.	1 1	1 1	6 6
9	Define Eigen values & Eigen vectors?	1	1	12
10	Explain in details about Sparse matrices. With example	1	1	12

Module – II: Python for Data Science

SNO	QUESTIONS	CO	BL	MARKS
1.	Explain the process of creating numpy arrays with suitable examples.	2	2	12
2.	Define about numpy array indexing with suitable examples.	2	1	12
3.	Explain in-detail about pandas library?	2	2	12
4.	a) What is series in pandas? Write a python script to demonstrate series.	2	1	6
	b) What is data frame? Write a python script to create a pandas data frame.	2	1	6
5.	What is missing data? Write a python script to check missing values for a given dataset and write a python script to fill missing values with appropriate data?	2	1	12
6.	Explain how pandas group by is used for grouping the data according to the categories with an example.	2	2	12
7.	Explain Matrix and Regression Plots	2	2	12
8.	Explain Seaborn Distribution?	2	2	12
9.	Explain Matplot lib library?	2	2	12
10.	Explain Plotly with example?	2	2	12

Module – III: Regression

SNO	QUESTIONS	CO	BL	MARKS
1.	Explain the process of data pre-processing in python?	3	2	12
2.	Define about regression analysis method?	3	1	12
3.	Illustrate about simple and Multiple linear regressions?	3	3	12
4.	Explain about polynomial regression?	3	2	12
5.	Define in-detail about Support Vector Regression (SVR) algorithm?	3	1	12
6.	Demonstrate the implementation of simple linear regression algorithm using python?	3	2	12
7.	Demonstrate the implementation of multiple linear regression algorithms using python?	3	2	12
8.	Demonstrate the implementation of polynomial regression using python?	3	2	12
9.	Demonstrate the implementation of Support Vector Regression (SVR) algorithm using python?	3	2	12
10.	Explain in-detail about decision tree regression?	3	2	12

Module – IV: Supervised Learning –Classification

SNO	QUESTIONS	CO	BL	MARKS
1.	Explain about Supervised machine learning?	4	1	12
2.	Explain about logistic regression?	4	2	12
3.	Demonstrate the implementation of logistic regression algorithm using python?	4	2	12
4	Explain in-detail about K-Nearest Neighbour (KNN) algorithm?	4	2	12
5.	Demonstrate the implementation of K-Nearest Neighbour (KNN) algorithm using python?	4	2	12
6	Define in-detail about Support Vector Machine (SVM) algorithm?	4	1	12
7.	Demonstrate the implementation of Support Vector Machine (SVM) algorithm using python?	4	2	12
8	Demonstrate about Naïve Bayes Classifier algorithm?	4	2	12
9	Demonstrate the implementation of Naïve Bayes Classifier algorithm using python?	4	2	12
10	Define in-detail about Decision Tree Classification algorithm?	4	1	12
11.	Demonstrate the implementation of Decision Tree Classification algorithm using python?	4	2	12
12.	Explain about Random Forest Classification algorithm with an example?	4	2	12

Module – V: Unsupervised Learning -Clustering

SNO	QUESTIONS	CO	BL	MARKS
1.	Define a short note on Unsupervised machine learning?	5	1	12
2.	Illustrate the difference between Supervised Learning and Unsupervised Learning?	5	3	12
3.	Explain in-detail about Clustering machine learning technique?	5	2	12
4.	Explain in-detail about K-Means Clustering algorithm?	5	2	12
5	Demonstrate the implementation of K-Means Clustering algorithm using python?	5	2	12
6.	Explain in-detail about Hierarchical Clustering algorithm?	5	2	12
7.	Demonstrate the implementation of Hierarchical Clustering algorithm using python?	5	2	12
8.	Explain in-detail about Reinforcement Learning technique?	5	2	12
9.	Explain about Principal Component Analysis (PCA) algorithm?	5	2	12
10.	Explain about dimensionality reduction technique Linear Discriminant Analysis (LDA)?	5	2	12

Name & Signature of the NECN Faculty	Name & Signature of the NECG Faculty	Name & Signature of the NECN HOD	Name & Signature of the NECG HOD

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