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22CAP317N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MCA DEGREE EXAMINATION DECEMBER 2025
(Third Semester)

Branch - **COMPUTER APPLICATIONS**

PYTHON FOR MACHINE LEARNING

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which is the first step in the data science workflow? a) Data munging b) Identify the question/problem c) Data visualization d) Model deployment	K1	CO1
	2	_____data Science tool is used for both data cleaning and feature engineering. a) Tableau b) Scikit-learn c) Excel d) Power BI	K2	CO1
2	3	Which of the following is an immutable data type in Python? a) List b) Tuple c) Dictionary d) Set	K1	CO2
	4	Which operator is used for floor division in Python? a) / b) % c) // d) **	K2	CO2
3	5	In k-fold cross-validation, if the value of k is 5, how many models are trained? a) 1 b) 5 c) 10 d) Depends on dataset size	K1	CO3
	6	High bias in a model usually leads to_____ a) Overfitting b) Underfitting c) Perfect generalization d) High variance	K2	CO3
4	7	Which distance metric is commonly used in K-Means clustering? a) Manhattan distance b) Cosine similarity c) Euclidean distance d) Hamming distance	K1	CO4
	8	Which one of the following models is a generative model used in machine learning? a) Linear Regression b) Logistic Regression c) Naïve Bayes d) Support vector machines	K2	CO4
5	9	Hierarchical clustering builds_____ a) Trees (dendrograms) b) Decision trees c) Neural nets d) Confusion matrix	K1	CO5
	10	What is deep learning based on? a)Neural networks b) Clustering c) Decision trees d) Random forests	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the characteristics of a Data scientist and a data science.	K2	CO1
		(OR)		
	11.b.	Discuss about the main Open Source Tools used in Data Science.		
2	12.a.	Compare mutable and immutable types in Python with examples.	K4	CO2
		(OR)		
	12.b.	Detect a Python program to find Positive or negative using if...elif...else.		
3	13.a.	Demonstrate Artificial Intelligence and Machine Learning.	K2	CO3
		(OR)		
	13.b.	Explain the process of pattern recognition in machine learning.		
4	14.a.	Explain the k-means clustering algorithm with an example.	K5	CO4
		(OR)		
	14.b.	Explain Classification using K-Nearest Neighbors.		
5	15.a.	Define ensemble learning and explain its importance in machine learning.	K5	CO5
		(OR)		
	15.b.	Explain about Bagging with an example and how it improves model performance.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions
ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Identify the Data Science Workflow and its importance of each phase.	K3	CO1
2	17	Examine the basic types in Python.	K4	CO2
3	18	Define Cross-Validation. Explain K-Fold Cross Validation with a neat diagram.	K5	CO3
4	19	Examine about Classification with Logistic Regression.	K4	CO4
5	20	Elaborate the concept Principal Component Analysis.	K6	CO5

Z-Z-Z END