GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY
(AN AUTONOMOUS INSTITUTION)
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(Accredited by NAAC with "A" Grade, NBA (EEE,ECE &ME) & ISO 9001:2008Certified Institution)

QUESTIONBANK(DESCRIPTIVE)

Subject Name with Code: MACHINE LEARNING (22A0528T)
Course & Branch: B.TECH CSE(AIML & DS & CS) **Year& Semester: III-I**
Regulation: RG22

UNIT - I

S.No.	Question	[BT Level] [CO][Marks]
	2 Marks Questions (Short)	
1.	List any four examples of Supervised Machine Learning.	L1/CO1/2M
2.	What is dimensionality reduction?	L1/CO1/2M
3.	List basic types of data in Machine Learning	L1/CO1/2M
4.	Outline bootstrap sampling?	L1/CO1/2M
5.	What is data transformation?	L1/CO1/2M
6.	Define data cleaning?	L1/CO1/2M
7.	Define human learning with example.	L1/CO1/2M
8.	Relate the terms penalty and reward in reinforcement learning	L2/CO1/2M
9.	What is generalization?	L1/CO1/2M
10.	Interpret reinforcement learning.	L2/CO1/2M
	Descriptive Questions (Long)	
1	Explain different types of human Learning.	L2/CO1/12M
2	Explain machine learning process with a neat sketch.	L2/CO1/12M
3	Explain different forms of Machine Learning with few examples.	L2/CO1/12M
4	Explain different tools available for solving problems in Machine Learning.	L2/CO1/12M
5	Explain the applications of machine learning.	L2/CO1/12M
6	Explain in detail about the data quality and remediation in ML	L2/CO1/12M
7	Compare between different types of data in ML.	L2/CO1/12M
8	Explain different perspectives and issues in machine learning.	L2/CO1/12M
9	Discuss the significance of data preprocessing in machine learning.	L2/CO1/12M
10	Explain the process of data cleaning with an example.	L2/CO1/12M

UNIT - II

S.No.	Question	[BT Level] [CO][Marks]
	2 Marks Questions (Short)	
1	Define Sensitivity of a model.	L1/CO2/2M
2	Identify the use of kappa value?	L3/CO2/2M
3	Compare between predictive and descriptive models.	L3/CO2/2M
4.	Define Random Sampling.	L1/CO2/2M
5.	What is hold-out method?	L1/CO2/2M
6.	Define the need for bootstrap sampling.	L1/CO2/2M
7.	Write the formula for F1-Score.	L1/C02/2M
8.	Contrast between underfitting and overfitting	L2/CO2/2M
9.	Write formulae for Precision and Recall	L1/CO2/2M
10.	Find the use of Ensemble approach	L1/CO2/2M
	Descriptive Questions (Long)	
1	Explain how to choose a model in machine learning?	L2/CO2/12M
2	Explain various methods used to train a model.	L2/CO2/12M
3	Explain K-fold Cross-validation method in detail.	L2/CO2/12M

4	Identify the differences between k-fold cross-validation and bootstrapping.	L3/CO2/12M
5	Compare between bias and variance.	L2/CO2/12M
6.	Apply all the cases involved in evaluating the performance of a classification model in supervised learning.	L3/CO2/12M
7.	Demonstrate the model interpretability and representation.	L2/CO2/12M
8.	Choose the approaches involved in evaluating the performance of a clustering model in unsupervised learning.	L3/CO2/12M
9.	Illustrate ensemble approach to improve the performance of a model.	L3/CO2/12M
10.	Explain bias variance trade off in the context of model fitting	L2/CO2/12M

UNIT - III

S.No.	Question	[BT Level] [CO][Marks]
	2 Marks Questions (Short)	
1.	What is supervised learning? Why it is called so?	L1/CO3/2M
2.	List any 2 examples of supervised learning.	L1/CO3/2M
3.	Define classification and regression in supervised learning?	L1/CO3/2M
4.	List few examples of common classification algorithms.	L1/CO3/2M
5.	What are the advantages of the Naïve Bayes model?	L1/CO3/2M
6.	List the disadvantages of the k-NN algorithm?	L1/CO3/2M
7.	Define entropy of a decision tree.	L2/CO3/2M
8.	Define information gain in a decision tree.	L2/CO3/2M
9.	Outline three weaknesses of a decision tree method.	L2/CO3/2M
10.	Define random forest model.	L2/CO3/2M
Descriptive Questions (Long)		
1	Differentiate between supervised learning, semi-supervised learning, and unsupervised learning	L2/CO3/12M
2	Explain any five examples of classification problems in detail.	L2/CO3/12M
3	Explain classification learning steps in detail.	L2/CO3/12M
4	Apply k-NN algorithm by taking suitable dataset to find a class label.	L3/CO3/12M
5	Apply Backpropagation technique by taking suitable dataset to find a class label.	L3/CO3/12M
6	Apply Naïve Bayes technique by taking suitable dataset to find a class label.	L3/CO3/12M
7	Explain the need for using Entropy and Information gain to partition the data in a decision tree.	L2/CO3/12M
8	Construct a random forest tree by choosing Bagging and Bootstrapping approaches	L3/CO3/12M
9	Explain decision tree based ID3 algorithm in detail.	L2/CO3/12M

UNIT - IV

S.No.	Question	[BT Level] [CO][Marks]
	2 Marks Questions (Short)	
1	Compare dependent and an independent variable in a linear equation	L4/CO4/2M
2	What is simple linear regression? Give one example.	L1/CO4/2M
3	Define slope in a linear regression.	L2/CO4/2M
4	Compare and contrast between the conditions of a positive slope & negative slope in linear regression?	L4/CO4/2M
5	Define multiple linear regression.	L1/CO4/2M
6	Define ridge & lasso regression	L1/CO4/2M
7	What is polynomial regression?	L1/CO4/2M
8	Categorize various regression techniques.	L4/CO4/2M
9	Which method is used for the best line of fit?	L1/CO4/2M
10	Recall multicollinearity in regression analysis.	L1/CO4/2M
	Descriptive Questions (Long)	
1	Explain simple linear regression with suitable example.	L2/CO4/12M
2	Illustrate logistic regression in detail with an example	L2/CO4/12M

3	Distinguish between linear positive slope and linear negative slope in a graph along with various conditions leading to the slope	L4/CO4/12M
4	Compare between curve linear negative slope curve and curve linear positive curve slope in a graph.	L4/CO4/12M
5	With suitable example analyze method of least squares.	L4/CO4/12M
6	List the assumptions in regression analysis.	L1/CO4/12M
7	Choose the method to improve accuracy of the linear regression model?	L3/CO4/12M
8	Infer the need for polynomial regression with an example	L4/CO4/12M
9	Explain multiple linear regression with an example.	L2/CO4/12M

UNIT - V

S.No.	Question	[BT Level] [CO][Marks]
	2 Marks Questions (Short)	
1.	Explain the use of unsupervised learning.	L2/CO5/2M
2.	List few application areas of unsupervised learning.	L1/CO5/2M
3.	List categories of clustering techniques	L1/CO5/2M
4.	List various partitioning methods.	L1/CO5/2M
5.	Define clade.	L2/CO6/2M
6.	Define DBSCAN.	L2/CO6/2M
7.	List various methods of hierarchical clustering.	L1/CO6/2M
8.	What is a dendrogram?	L1/CO6/2M
9.	Compare between DENCLUE and OPTICS.	L3/CO6/2M
10.	Compare between k-Means and k-Medoids approaches.	L3/CO5/2M
	Descriptive Questions (Long)	
1	Distinguish between supervised and unsupervised learning techniques.	L4/CO5/12M
2	Explain the concept of clustering with neat diagram.	L2/CO5/12M
3	Apply agglomerative hierarchical clustering with a suitable example.	L3/CO6/12M
4	Analyze various clustering techniques.	L4/CO5/12M
5	Apply DBSCAN algorithm on the given data set Data Points: P1: (3, 7) P2: (4, 6) P3: (5, 5) P4: (6, 4) P5: (7, 3) P6: (6, 2) P7: (7, 2) P8: (8, 4) P9: (3, 3) P10: (2, 6) P11: (3, 5) P12: (2, 4)	L3/CO6/12M
6	Apply k-means algorithm on the data set A1(2, 10), A2(2, 5), A3(8, 4), B1(5, 8), B2(7, 5), B3(6, 4), C1(1, 2), C2(4, 9).	L3/CO5/12M
7	Explain in detail about DENCLUE clustering technique with an example.	L2/CO6/12M

8	Apply k-medoid algorithm on the data set i x y X1 2 6 X2 3 4 X3 3 8 X4 4 7 X5 6 2 X6 6 4 X7 7 3 X8 7 4 X9 8 5 X10 7 6	L3/CO5/12M
9	Explain OPTICS clustering Algorithm with an example.	L2/CO6/12M

Signature of the Staff:

Signature of Department Academic Committee Member 1:

Signature of Department Academic Committee Member 2:

Signature of Department Academic Committee Member 3: