Exam.Code:1000
Sub. Code: 7630

2072

M.E. (Computer Science and Engineering)

Second Semester

Elective - III

CS-8205: Machine Learning

Time allowed: 3 Hours | Max. Marks: 50

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Part.*

I	a) What is the most commonly used cost function for classification model? Discuss in brief. b) What is cross-validation procedure? What is its use? c) Why do we need soft margin in SVM? d) Differentiate between core-points and border-points in DBSCAN clustering. e) Give the general form of probability density function of normal distribution.	(02) (02) (02) (02) (02)
	PART I	
II	a) If True Positive (TP) = 70, True Negative (TN) = 25, False Positive (FP) = 25 and False Negative = 20, then what is i) Recall ii) Specificity iii) False Positive Rate iv) Precision and v) Error Rate b) Why are overfitting and underfitting situations bad? How can they be detected and avoided? Is overfitting more critical than underfitting? Discuss.	(05) (05)
III	a) Discusses any two strategies for reducing the problem of multiclass classification to multiple binary classification problems. b) What is multivariate linear regression? How parameter learning happens in multivariate linear regression? Discuss.	(04) (06)
IV	a) What is class imbalance problem? What tactics can be employed to handle this problem? Discuss. b) What is the use of kernel function in SVM? Discuss any two commonly used kernel functions.	(04) (06)
	PART II	
V	a) Discuss the working of k-Means clustering algorithm and its ability to handle outliers. b) Compare the characteristics of density-based methods of clustering with hierarchical methods of clustering.	(06) (04)
VI	a) What is Expectation Maximization Algorithm? What is the purpose of E-Step and M-Step? Discuss. b) What are the steps involved in building an anomaly detection system? What are the challenges involved? Discuss.	(05) (05)
VII	Write notes on the following: a) Collaborative Filtering b) Density Estimation	 (05) (05)

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