Re-Exam

Sardar Patel Institute of Technology
Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058,
India
(Autonomous College Affiliated to University of Mumbai)

End Semester Examination

Max. Marks: 100
Class: B.E.
Course Code:EC433

Duration: 3 Hr
Semester: VII
Branch: ETRX &EXTC

Name of the Course: Artificial Intelligence and Machine Learning

Instruction:
(1) All questions are compulsory
(2) Draw necessary diagram

Q No.		Max. Marks	CO	BL
Q.1 a)	**Each question of 5 Marks** i)Distinguish between supervised learning and Reinforcement learning. Illustrate with an example. ii) Give three computer applications for which machine learning approaches seem appropriate and three for which they seem inappropriate. iii) When does regularization come into play in Machine Learning? iv) What do you mean by 'Vanishing Gradient'? In which NN it occurs?	20	**CO1, CO3**	**3**
Q2a)	Evaluate dimension reduction using PCA on the given dataset and calculate the Eigen values. | | X1 | X2 | X3 | X4 | | X | 4 | 8 | 13 | 7 | | | 11 | 4 | 5 | 14 |	10	**CO2**	**3**
b)	i)Compare between Inductive and deductive Methods ii)Demonstrate the concept of Candidate elimination algorithm on the following Dataset | Example | Sky | AirTemp | Humidity | Wind | Water | Forecast | EnjoySport | | 1 | Sunny | Warm | Normal | Strong | Warm | Same | Yes | | 2 | Sunny | Warm | High | Strong | Warm | Same | Yes | | 3 | Rainy | Cold | High | Strong | Warm | Change | No | | 4 | Sunny | Warm | High | Strong | Cool | Change | Yes | OR ii)Can Random Forest Algorithm be used both for Continuous and Categorical Target Variables? What do you mean by Bagging?	10	**CO2**	**4**

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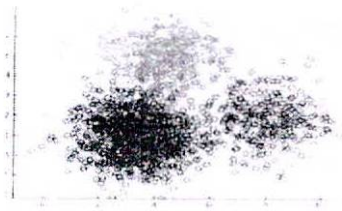
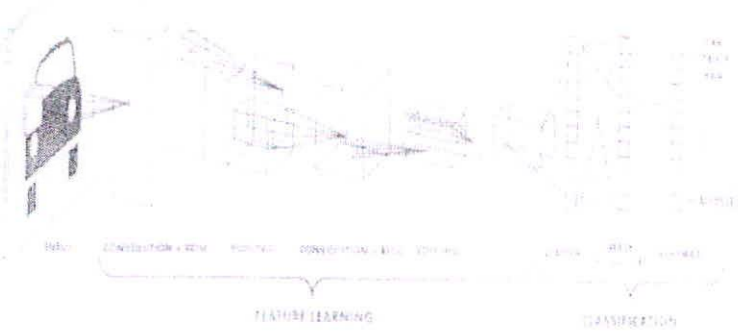
Q3a)	Based on the Clustering Type , give the following answer  i)K-Means can be used to solve _____ problems. ii)In K-Means, K stands for _____ iii)K-means clustering aims to partition n observations into k clusters in which each observation belongs to the cluster with the nearest _____ iv)------ algorithm has similarity with K-Means? v) The goal for K-Means cost function is to _____ squared error function where error function represents distance between data points and cluster centroid. ii) How to decide the optimal number of K in the K mean algorithm?	10	CO2	4
b)	What are the Steps of Multivariate Regression analysis? **OR** What is Gaussian Mixture Model and When to use?	10	CO2	3
Q4 a)	Test your skill on given Network  i)Why do we prefer this network for image data as input?	10	CO3	4

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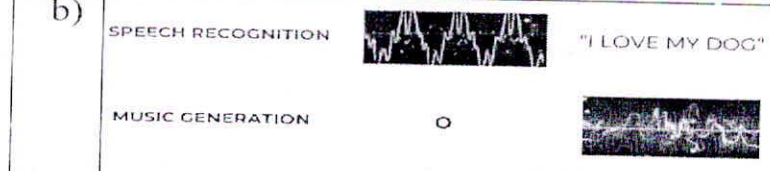
	ii Why do we use a Pooling Layer in a given network? iii)An input image has been converted into a matrix of size 12 X 12 along with a filter of size 3 X 3 with a Stride of 1. Determine the size of the convoluted matrix. iv) Does the size of the feature map always reduce upon applying the filters? Explain why or why not.			
b)	 Identify the suitable neural network for the above applications. Discuss the architecture for the same.	10	CO3	4
Q5a)	Suppose 10000 patients get tested for flu; out of them, 9000 are actually healthy and 1000 are actually sick. For the sick people, a test was positive for 620 and negative for 380. For the healthy people, the same test was positive for 180 and negative for 8820. • Construct a confusion matrix for the data and compute the • Prevalence, Accuracy • Misclassification rate, Sensitivity • Specificity, False Positive Rate (FPR): • False Negative Rage, Precision • Negative Predictive Value (NPV)	10	CO4	4
b)	Design the suitable model to predict the word in the following sentence. Rahul eats chicken almost every day it should not be hard to say that he is ---------. His sister Lata however is lover of sushi and Udon Noodles that means Lata's favorite Cuisine is ---------. OR Justify with suitable steps that Google Translate app is best example of Natural Language processing (NLP).	10	CO4	4