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END SEMESTER EXAMINATION, JUNE- 2024**B. Tech. (CSE) Semester - VIII****Course Name: Machine Learning****Course Code: ECS489****Time allotted: 03 Hours****Max. Marks: 100****Note: Read all the instructions carefully.****Q.1. Attempt all.****(10×2=20)**

a.	How are the points in the domain set given as input to the algorithm? a) Vector of features b) Scalar points c) Polynomials d) Clusters	CO1	PO1
b.	To which input does the learner has access to? a) Testing Data b) Label Data c) Training Data d) Cross-Validation Data	CO2	PO2 PO3
c.	The set which represents the different instances of the target variable is known as _____ a) domain set b) training set c) label set d) test set	CO3	PO3 PO4
d.	What is the learner's output also called? a) Predictor, or Hypothesis, or Classifier b) Predictor, or Hypothesis, or Trainer c) Predictor, or Trainer, or Classifier d) Trainer, or Hypothesis, or Classifier	CO3	PO3 PO4
e.	It is assumed that the learner has prior knowledge about the probability distribution which generates the instances in a training set. a) True b) False	CO4	PO4 PO5
f.	The error of classifier is measured with respect to _____ a) variance of data instances b) labeling function c) probability distribution d) probability distribution and labeling function		
g.	What is not accessible to the learner? a) Training Set b) Label Set c) Labeling Function d) Domain Set	CO4	PO4 PO5
h.	The algorithm is trying to find a suitable day for swimming. What is the most general hypothesis? a) A rainy day is a positive example b) A sunny day is a positive example c) No day is a positive example d) Every day is a positive example	CO5	PO6 PO7

i.	Candidate-Elimination algorithm can be described by _____ a) just a set of candidate hypotheses b) depends on the dataset c) set of instances, set of candidate hypotheses d) just a set of instances	CO5	PO6 PO7
j.	How is the version space represented? a) Least general members b) Most general members c) Most general and least general members d) Arbitrary members chosen from hypothesis space	CO5	PO6 PO7

Q.2. Short notes / Short Answer Type (Attempt any five out of Seven)

(5×4=20)

a.	Define Machine Learning.	CO1	PO1 PO2
b.	Compare learning vs programming.	CO2	PO3 PO4
c.	How AI differ from Machine learning?	CO3	PO4 PO5
d.	List the application software tools	CO4	PO4 PO5 PO6
e.	List different forms of learning.	CO5	PO5 PO6 PO7
f.	Draw basic learning system model.	CO3	PO4 PO5
g.	Define Gaussian process.	CO5	PO5 PO6 PO7

Q.3. Structured Question (Attempt any three out of four)

(3×10=30)

a.	(i) Demonstrate the supervised learning structure (ii) Explain various learning techniques involved in supervised learning (iii) Summarize the advantages and disadvantages of Gaussian process	CO4	PO4 PO5 PO6
b.	(i) Short note on Bias and variance (ii) Compare biological neuron and artificial neuron (iii) Draw the simple perceptron model	CO5	PO5 PO6 PO7
c.	(i) List some linear and nonlinear activation function. (ii) Apply the formula for sigmoidal function. (iii) Examine the delta learning rule.	CO3	PO4 PO5
d.	(i) How to estimate error in the output layer. (ii) Explain biological Neuron. (iii) Explain simple model of an Artificial Neuron and its functions.	CO5	PO5 PO6 PO7

Q.4. Long Answer / Essay type (Attempt any two out of three)

(2×15=30)

a.	(i) What is Machine Learning? Explain different perspective and issues in machine learning? (ii) Explain the concept of Bayes theorem with an example.	CO3	PO4 PO5
b.	(i) Explain Bayesian belief network and conditional independence with example. Explain e. (ii) Explain the k-Means Algorithm with an example.	CO4	PO4 PO5 PO6
c.	(i) How do you classify text using Bayes Theorem? (ii) Relate Inductive bias with respect to Decision tree learning.	CO3	PO4 PO5
