

Duration 3 Hours

[Maximum Marks 80]

- NOTE: -1) Question 1 is compulsory**
2) Solve any three from the remaining five questions
3) Assume suitable data if necessary.
4) Figures to the right indicate full marks

- Q.1. Attempt any four 20
- Explain loss function in machine learning.
 - Define entropy. What is the entropy for a decision tree data-set with 6 positive and 4 negative examples?
 - How to choose right algorithm for developing Machine learning.
 - Distinguish supervised and unsupervised learning.
 - Explain Bias and variance concept.
- Q.2.a) Explain Principle component analysis. 10
 b) Discuss in detail supervised learning after clustering with one example. 10
- Q.3 a) Explain how machine learning is used in Credit card Fraud detection. 10
 b) Describe Kernels for learning nonlinear function. 10
- Q.4. a) What is ROC curve? Explain one-versus-one Symmetric for classification 10
 b) Given below is the confusion matrix for image recognition having a Dog image or not Dog image. Find Precision, Recall, Accuracy, F1 Score, Specificity 10

		Actual	
		Dog	Not Dog
Predicted	Dog	5	1
	Not Dog	1	3

- Q.5. a) Short note on Classification and regression Trees (CART). 10
 b) Explain Naïve Baye’s classifier with suitable example. 10
- Q.6. a) Explain linear and logistic regression 10
 b) Explain different error measures used for performance of regression.
 Find Mean absolute and root mean square error for the following dataset. 10

No Of Hour spent Daily For Study	Marks Obtained	Marks Predicted
1	65	70
1.5	66	63
2	70	69
2.5	72	71
3	85	90
