



**NAVRACHANA
UNIVERSITY**
a UGC recognized University

School: School of Engineering and Technology
Program/s: BTech(IT)
Year: 3rd **Semester:** 5th
Examination: End Semester Examination
Examination year: December - 2021

Course Code: IT337 **Course Name:** Mathematics for Machine Learning
Date: 09/12/2021 **Total Marks:** 40
Time: 11:30 am to 01:30 pm **Total Pages:** 01

Instructions:

- Write each answer on a new page.
- Use of a simple calculator is permitted.
- Draw all relevant waveforms in answer sheet only.
- * COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping

Q. No.	Details	Marks	COs*	BTL#
Q.1	Attempt any five	[10]		
A.	Which of the following are the examples of classification? 1. Face Recognition 2. Home price prediction 3. Stock price prediction 4. Garbage segmentation 5. Medicine dosage prediction 6. Right medicine identification	[02]	C03	BT3
B.	Which of the following are the examples of regression? 1. Face Recognition 2. Home price prediction 3. Stock price prediction 4. Garbage segmentation 5. Medicine dosage prediction 6. Right medicine identification	[02]	C03	BT3
C.	Explain k-fold cross validation in detail.	[02]	C03	BT1
D.	List different problems to be addressed while finding regression function.	[02]	C03	BT1
E.	Explain p vs H(p) graph.	[02]	C04	BT2
F.	List and explain different types of probabilities in HMM.	[02]	C04	BT3
Q.2	Attempt any two	[10]		
A.	What do you mean by overfitting? Explain the role of regularization for reducing overfitting.	[05]	C03	BT2
B.	Write a short note on Entropy.	[05]	C04	BT1
C.	Explain Least Square loss in detail.	[05]	C04	BT1
Q.3	Attempt any two	[20]		
A.	Write a short note in model fitting.	[10]	C03	BT1
B.	Write a short note in Bayes theorem.	[10]	C03	BT1
C.	Write a short note in HMM.	[10]	C04	BT1