Seat No.:_____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER– V- EXAMINATION – WINTER - 2017

Subject Code: 3650014 **Date:30/11/ 2017**

Subject Name: Machine Learning

Time:10:30 AM TO 01:00 PM **Total Marks: 70**

INSTRUCTIONS

(i) Attempt questions as directed
(ii) Numbers indicated to the right are the full marks
(iii) Draw diagrams where necessary.
(iv) Figures on the right indicate Marks

Q:1	**(a)**	Answer the Following	
	1	Machine Learning	**02**
	2	Root Mean Square Error	**02**
	3	Confusion Matrix	**02**
	(b)	Answer the Following	
	1	Information Gain	**02**
	2	Back Propagation	**02**
	3	Bayesian Belief Networks	**02**
	4	MAP Hypothesis	**02**
Q.2		**Answer the following**	
	(a)	Write ID3 Decision Tree Algorithm and explain with suitable example	**07**
	(b)	Give Decision Tree representations for following Boolean Functions • $A \vee (B \wedge C)$ • $(A \wedge B) \vee (C \wedge D)$	**07**
		OR	
	(b)	What is Entropy? How do we employ Mutual Information for Classification between a positive and negative Class?	**07**
Q.3		**Answer the following**	
	(a)	What is a Neural Network (NN)? What types of problems are suitable WITH NN? Explain Hidden Layer with suitable example.	**07**
	(b)	With a suitable example explain back propagation in Neural Network ?	**07**
		OR	
Q.3	**(a)**	Explain Confusion Matrix with respect to detection of "**Spam e-mails**".	**07**
	(b)	With a suitable example, explain Face Recognition using Machine Learning.	**07**
Q.4		**Answer the following**	
	(a)	Explain MAP Hypothesis to predict probability.	**07**
	(b)	With a suitable method, identify handwritten characters [0-9] using appropriate machine learning technique.	**07**
		OR	
Q.4	**(a)**	Describe CART. Explain with suitable example	**07**
	(b)	What is Gibbs Algorithm? What is its suitability in Machine Learning?	**07**
Q.5	**(a)**	What is a Recommender System? How Machine Learning is useful in Recommender Systems?	**07**
	(b)	What is an Inductive bias? Is there any effect on classification due to bias?	**07**
		OR	
Q.5	**(a)**	Explain K-Nearest Neighbour techniques with an example	**07**
	(b)	In which cases Naive Bayes is useful in Classification? Why?	**07**

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