Name: Enrolment No:	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2019

Course: Machine Learning — **Semester: II**
Program: M.Tech — **Time 03 hrs.**
Course Code: CSAI7007 — **Max. Marks: 100**

SECTION A

No.		Marks	CO
Q 1	Explain most specific to most general hypothesis with representation.	4	CO1
Q 2	Is ensemble an effective method? Under what circumstances can this approach be recommended and why?	4	CO2
Q 3	What is the challenging aspect in dataset during learning? How can it be addressed?	4	CO3
Q 4	Evaluate supervised and unsupervised learning using a case study and conclude using any evaluation metric suitable?	4	CO4
Q 5	What is the purpose of back propagation? Demonstrate the computation carried out for back propagation learning and how it can obtain stability in learning?	4	CO5
	SECTION B		
Q 6	What is best solution that can handle learning from overfitting and under fitting of training data.	10	CO2
Q 7	Explain how support vector machine can be used to find optimal hyperplane to classify linearly separable data. Give suitable examples.	10	CO3
Q 8	For the data set given below, construct the decision tree **Name Hair Height Weight Location Class** Sunita blonde average light no yes anit blonde tall average yes no kavita brown short average yes no sushma blonde short average no yes xavier red average heavy no yes balaji brown tall heavy no no ramesh brown average heavy no no swetha blonde short light yes no	10	CO4
Q 9	a) Define Null and Alternate Hypothesis for the said: A new drug is developed with the goal of lowering blood pressure more than the existing drug. b) A major west coast city provides one of the most comprehensive emergency medical	10	CO2

	services in the world. Operating in a multiple hospital system with approximately 20 mobile medical units, the service goal is to respond to medical emergencies with a mean time of 12 minutes or less. The director of medical services wants to formulate a hypothesis test that could use a sample of emergency response times to determine whether or not the service goal of 12 minutes or less is being achieved. Calculate the probability of Type II error (or) a) Explain Type 1 and Type II errors. b) Define Null and Alternate Hypothesis for the below: 1. The label on a soft drink bottle states that it contains 67.6 fluid ounces. 2. A new sales force bonus plan is developed in an attempt to increase sales.		
SECTION-C			
Q 10	What are the various components considered during model selection? For an application such as forecasting student progression in your class, using the data such as your marks, attendance, etc determine how a model selection is carried out.	**20**	**CO3, CO4**
Q 11	a) What is the significance of learning rate in a neural network and demonstrate the selection of learning rate using a MLP neural network of 4-2-1, using step-function as activation function. or b) "Recurrent neural network is specific category for demonstrating temporal dynamic behavior" – Justify the statement with both theoretical and computational aspect	**20**	**CO1, CO5**