Total No. of Questions :6]

SEAT No. :

P287

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Oct./ BE/ Insem. - 605

B.E. (Information Technology)

MACHINE LEARNING AND APPLICATIONS

(2015 Course) (Semester-I) (414454)

Time : 1 Hour] *[Max. Marks :30*

Instructions to the candidates:

1) ***Answer Q.NO.1 or 2,Q.NO. 3or 4, Q.NO. 5 or 6.***
2) ***Draw neat diagrams wherever necessary.***
3) ***Assume suitable data, if necessary.***
4) ***Figures to the right indicate full marks.***

Q1) a) Write Short note on following two examples of machine learning applications **[5]**

i) Learning Association

ii) Reinforcement Learning

b) Explain semi- supervised learning & supervised & unsupervised. **[5]**

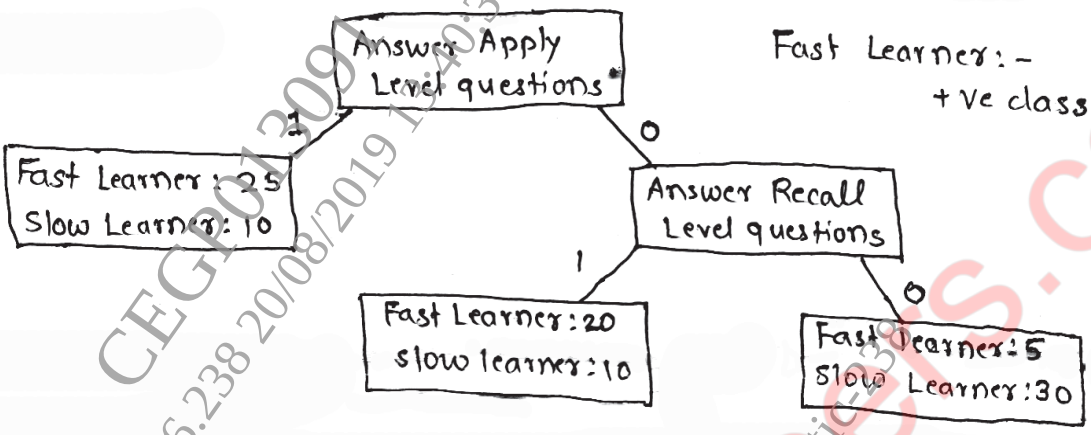
OR

Q2) a) Explain with example forward & backward selection methods of subset selection **[5]**

b) Explain with example K-fold cross validation **[5]**

P.T.O.

Q3) a) **[5]**



i) Find contingency table.
ii) Find Recall.
iii) Precision
iv) Negative recall.
v) False positive rate.

b) Write & explain perceptron training algorithm for linearclassification **[5]**

OR

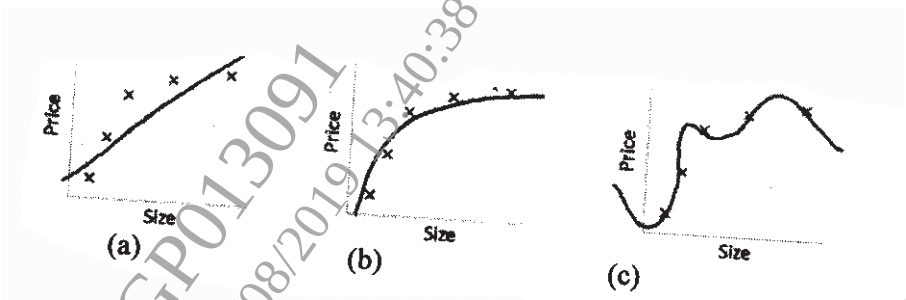
Q4) a) Consider the three-class confusion matrix. Calculate precision and Recall per **[5]**

	predicted		
Actual	15	2	3
	7	15	8
	2	3	45

b) Write short note on Gram matrix and explain with example. **[5]**

Q5) a) Explain bias-variance dilemma. **[5]**

b) **[5]**



Explain the above figures (a), (b) and (c)

OR

Q6) a) Justify the following **[5]**

i) Predict the height of a person. Is it a regression task?
ii) Find the gender of a person by analyzing his writing style. Is it a classification task?
iii) Filter out spam emails. Is it a example of unsupervised learning

b) Suppose you have been given a set of training examples **[5]**

$\{[x_1,y_1), (x_2,y_2).....(x_n,y_n)\}$. Find the equation of the line that best fits the data in that minimizes the squared error.