

Total No. of Questions :6]

SEAT No. :

**P287**

[Total No. of Pages :3

**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. 3 or 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

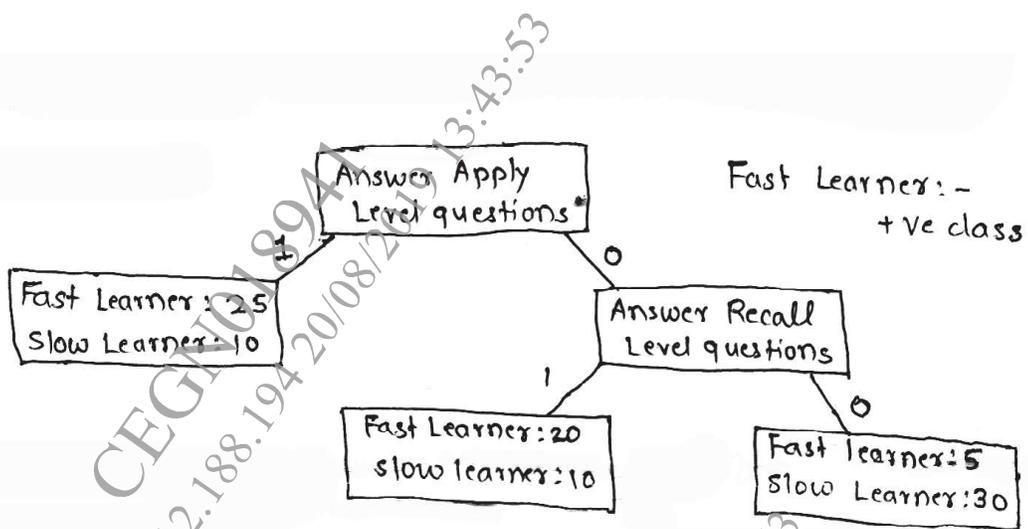
**Q2) a)** Explain with example forward & backward selection methods of subset selection [5]

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 linear classification [5]

OR

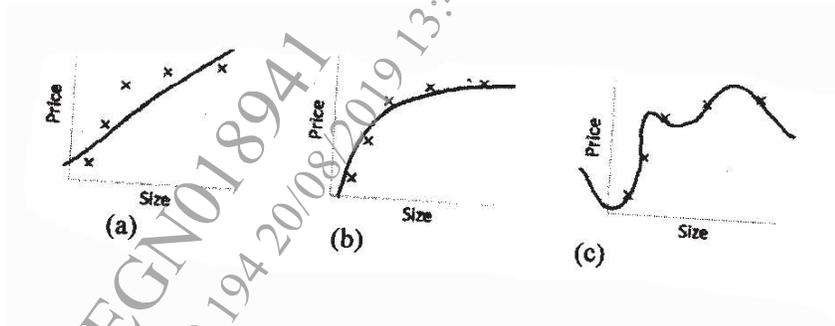
Q4) a) Consider the three-class confusion matrix. Calculate precision and Recall per [5]

	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 an example of unsupervised learning?

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

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

