

Total No. of Questions : 10]

SEAT No. :

**P3127**

**[5154]-693**

[Total No. of Pages : 2

**BE (IT)**

**MACHINE LEARNING**

**(2012 Pattern) ( 414455) (Semester-I) (End Sem.)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Draw neat diagrams wherever necessary.*
- 2) *Assume suitable data, if necessary.*
- 3) *Figures to the right indicate full marks.*

**Q1) a) Write Mathematical form of the following: [5]**

- i) Classification
- ii) Class probability estimation
- iii) Regression.

Which one out of these three is more precise? Which one leads to overfitting?

**b) Prove with an example  $FP = Neg - TN$ . [5]**

**OR**

**Q2) a) Write output code matrix for one-versus-one symmetric case. Assume three classes. [5]**

**b) Justify use of Machine Learning to solve following task: "Prediction of sale value of a car based on the locality of the property". [5]**

**Q3) a) Explain VC dimension. [5]**

**b) Explain kernel methods for non-linearity. [5]**

**OR**

**Q4) a) What is Machine Learning? Explain any one application where Machine Learning can be used. [5]**

**b) Explain Support Vector Machine. [5]**

**P.T.O.**

**Q5) a)** Find all 3 -item itemsets from this set with minimum support=2. [9]

Trans_id	Itemlist
T1	{K, A, D, B}
T2	{D, A, C, E, B}
T3	{C, A, B, E}
T4	{B, A, D}

b) Write K-means algorithm. [9]

OR

**Q6) a)** Explain silhouettes. [9]

b) Discuss various distance measures. [9]

**Q7) a)** Write a note on compression based models. [8]

b) Explain Naive Bayes Classification Algorithm. [8]

OR

**Q8) a)** Define the terms: [8]

- i) Bernoulli distribution
- ii) Binomial distribution
- iii) Multinomial distribution
- iv) Gaussian distribution

b) Explain discriminative learning. [8]

**Q9) a)** Explain on-line learning. [8]

b) Explain multi task learning [8]

OR

**Q10)a)** Explain the concept of penalty and award in reinforcement learning. [8]

b) Explain ensemble learning. [8]

