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| **CAT -1 Question paper1** | | | | | | | |
| Programme | | : | **B.Tech.** | | | | |
| Course Title | | : | **Introduction to Machine Learning** | Code | : | **CSE3008** | |
| Time | | : | **01:30 Hours** | Max. Marks | : | **50** | |
| **Part A- Answer all the Questions** | | | | | | | |
|  | What is regularization? Explain Regularized Logistic regression with an example | | | | | | **5** |
|  | Build a ID3 Decision Tree to classify the above data( buys\_computer attribute is the outcome) | | | | | | **15** |
|  | Write down the candidate elimination algorithm and apply this algorithm on the given dataset below, find the learned version space.  ***Sky****: Sunny, Cloudy, Rainy* ***Wind****: Strong, Weak*  ***AirTemp****: Warm, Cold* ***Water****: Warm, Cool*  ***Humidity****: Normal, High* ***Forecas****t: Same, Change* | | | | | | **10** |
|  | A regression between foot length (response variable in cm) and height (explanatory variable in inches) for 33 students resulted in the following regression equation:  yˆ = 10.9 + 0.23 x  a).One student in the sample was 73 inches tall with a foot length of 29 cm. What is the predicted foot length for this student?  b). One student in the sample was 73 inches tall with a foot length of 29 cm. What is the residual for this student?  c). What is the estimated average foot length for students who are 70 inches tall? | | | | | | **10** |
|  | Suppose we have height, weight and T-shirt size of some customers and we need to predict the T-shirt size of a new customer given only height and weight information we have. Data including height, weight and T-shirt size information is shown below -   |  |  |  | | --- | --- | --- | | **Height (in cms)** | **Weight (in kgs)** | **T Shirt Size** | | 158 | 58 | M | | 158 | 59 | M | | 158 | 63 | M | | 160 | 59 | M | | 160 | 60 | M | | 163 | 60 | M | | 163 | 61 | M | | 160 | 64 | L | | 163 | 64 | L | | 165 | 61 | L | | 165 | 62 | L | | 165 | 65 | L | | 168 | 62 | L | | 168 | 63 | L | | 168 | 66 | L | | 170 | 63 | L | | 170 | 64 | L | | 170 | 68 | L |   **Use K-NN algorithm and find for the customer named 'Ram' has height 161cm and weight 61kg with K=5.** | | | | | | **10** |