Question 1 (3 points):

|  |  |  |  |
| --- | --- | --- | --- |
| **Classifier** | **Briefly describe how a model is built (Enter “N/A” if the classifier does not build a model)** | **Briefly describe how the model is applied to a new data instance** | **“Ideal” Input Feature Type (discrete or continuous)** |
| Naïve Bayes | <answer> | <answer> | <answer> |
| Support Vector Machine | <answer> | <answer> | <answer> |
| Nearest Neighbor | <answer> | <answer> | <answer> |
| Decision Trees | <answer> | <answer> | <answer> |

Question 2 (1 point): You have built a Naïve Bayes classifier model and it produces the following confusion matrix for a test set with 1000 data instances. Do you consider this model’s performance to be acceptable? Why or why not?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Actual class** |  | **Predicted class** | | |
| Class 1 | Class 2 |
| Class 1 | 850 | 0 |
| Class 2 | 150 | 0 |

<your answer goes here>

Question 3 (2 points): You have built a Decision Tree model with a max depth of 15. The following two confusion matrices have been generated using the model. The first confusion matrix denotes model performance using the training set, while the second confusion matrix is the performance using the test set. Why do you think the model has produced these results?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Actual class** |  | **Predicted class** | | |
| High | Medium | Low |
| High | 750 | 5 | 10 |
| Medium | 7 | 550 | 12 |
| Low | 9 | 8 | 350 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Actual class** |  | **Predicted class** | | |
| High | Medium | Low |
| High | 140 | 150 | 175 |
| Medium | 87 | 45 | 76 |
| Low | 104 | 101 | 99 |

<your answer goes here>

Question 4 (1 point): The age of patients in a medical data set range from 18 years old to 75 years old. There are 1000 patients in the data set. Describe how you would discretize the “Age” feature into 3 separate categories, such that there is a relatively even distribution of patients across the 3 categories.

<your answer goes here>