**Course: PMIT-6307; Class Test-03; Marks-10; Time-30 Minutes**

1. Illustrate the process of the 5-nearest neighbor’s algorithm with an example. [4]
2. Consider a situation where you have 1000 fruits which are either ‘banana’ or ‘apple’ or ‘other’. The possible attributes of any fruit are: [Long, Sweet, Yellow]. The training dataset & summary of the training dataset will look like Table 1 & Table 2. Now consider a case where you are given that a fruit is **long, sweet and yellow**; & you need to predict what type of fruit is it [using **Naïve Bayes]**. [6]

Table 1: Training Dataset

|  |  |  |  |
| --- | --- | --- | --- |
| **Long** | **Sweet** | **Yellow** | **Fruit** |
| 0 | 0 | 1 | Apple |
| 1 | 0 | 1 | Banana |
| 0 | 1 | 0 | Apple |
| 1 | 1 | 1 | Other |
| … | … | … | … |

Table 2: Summary

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Type** | **Long** | **Not Long** | **Sweet** | **Not Sweet** | **Yellow** | **Not Yellow** | **Total** |
| Banana | 400 | 100 | 350 | 150 | 450 | 50 | 500 |
| Apple | 0 | 300 | 150 | 150 | 300 | 0 | 300 |
| Other | 100 | 100 | 150 | 50 | 50 | 150 | 200 |
| **Total** | **500** | **500** | **650** | **350** | **800** | **200** | **1000** |