**Question 1 (8 points):**

Consider again the example application of Bayes rule in Section 6.2.1 of Tom Mitchell’s textbook. Suppose the doctor decides to order a second laboratory test for the same patient and suppose the second test returns a positive result as well. What are the posterior probabilities of *cancer* and *cancer* respectively following these two tests? Assume that the two tests are independent.

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**Question 2 (8 points):**

Section 6.9.1 of Tom Mitchell’s textbook demonstrates an example using the Naïve Bayes

Algorithm to predict a new instance based on a dataset with 14 examples from Table 3.2 of Chapter 3 of the book. If we only have 12 examples as shown below, what is the prediction results for the same new instance? Show your calculation.

New instance: <Outlook=sun, Temperature=cool, Humidity=high, Wind=strong>

Table

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**Question 3 (14 points):** Answer question 4.7 (page 125) of Tom Mitchell’s textbook as quoted below:

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Diagram

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