**Q1 –**

**A. Introduction and Math Prelims (Ref: Class notes/slides +Bishop) – 5 Marks**

Problems + Conceptual questions

* Probability Theory – Problems
  + Problems on Probability Theory

**B. Bayesian Learning – 5 Marks**

Problems + Theory questions on this module

* Bayes Theorem (T1 book by Tom Mitchell -6.2)
  + Problems related to Bayes Theorem
* MAP Hypothesis (T1 book by Tom Mitchell -6.3) - Problems
* MLE Hypothesis (T1 book by Tom Mitchell -6.4) -Problems
* Minimum Description Length (MDL) principle
* Bayes optimal classifier and Gibbs Algorithm (T1 book by Tom Mitchell 6.7,6.8)

**Q2**

**A. Naive Bayes Classifier – 5 Marks**

Problems + Theory questions on this module

* Naïve Bayes Classifier (T1 book by Tom Mitchell 6.9)
* Text classification model (T1 book by Tom Mitchell - 6.9)
* Problems on Naïve Bayes Classier and Laplace smoothing

**B. Logistic Regression – 5 Marks**

Problems + Conceptual questions (class +Andrew Ng notes and Bishop - 4.1)

* Discriminant Functions
* Probabilistic Discriminative Classifiers
* Logistic regression
* Difference between Naïve Bayes Classifier and Logistic Regression

**Q3**

**A. Linear Regression – 5 Marks**

Problems + Conceptual questions on this module

* Regression (Andrew Ng Notes)
  + Problems related to simple linear regression
* Bayesian linear regression (6.4 Tom Mitchell)
* Linear basis function models (Class notes/slides)
* Bias-variance decomposition (Class notes/slides)

**B. Decision Tree – 5 Marks**

Problems + Conceptual questions on this module

* Decision Tree (Tom Mitchell Chapter 3)
  + Problems related to decision tree using information gain
* Handling overfitting (Class notes/slides)
* Continuous values (Class notes/slides)
* Missing Values(Class notes/slides)