Ahmedabad University

School of Arts and Sciences

STA310 Bayesian Data Analysis

BS
Mid Term Examination 2021-22 (Winter Semester)

Total Marks = 50 **Time – 2 hours**

Enrolment Number:.....
Date: 08-03-2022
No. of printed pages: 1

***Section - A** : Each question carries 05 marks.* **[20 Marks]**

Q1. Define conditional probability.

Q2. State and prove the Bayes theorem.

Q3. Describe exchangeability.

Q4. What is simulation and how it can be used for inference.

***Section - B** : Each question carries 10 marks.* **[30 Marks]**

Q6. Describe conjugacy. Find a conjugate prior for a binomial model. 5 + 5

Q7. What is the exponential family of distributions? Show the form of the prior density that has natural conjugates for the exponential family of distributions. 5 + 5

Q8. Derive the posterior distribution using a conjugate prior for data from a Normal distribution with known mean but unknown variance.