



Register Number:

**DATE: 13-01-2021**

**ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27**

**M.Sc. STATISTICS - I SEMESTER**

**SEMESTER EXAMINATION - DECEMBER 2020**

**STA7520 – STATISTICAL COMPUTING**

**Time: 1½ hrs**

**Max: 35 Marks**

This question paper has **ONE** printed page and **TWO** parts

**SECTION – A**

**I Answer any THREE of the following:**

**3 x 3 = 9**

1. Explain inverse transform method of generating random observations
2. Briefly explain construction of Q-Q plot
3. Write down steps involved in generating random observations from binomial distribution
4. Write a note on direct search algorithms
5. What is Monte Carlo (MC) integration? Name any two sampling methods used in MC integration

**SECTION – B**

**II Answer any TWO of the following:**

**2 x 13 = 26**

6. A) Explain linear congruential method for generating pseudo random numbers and discuss about properties of good random number generator. (7)  
B) Outline polar method of generating random observations from Normal Distribution.

**OR**

- B) Write down R codes to generate 20 random observations from Gamma Distribution with scale parameter = 2 and shape parameter = 1 (6)

7. A) Explain rejection method of generating random observations from a probability density function. (5)

- B) Describe one graphical method and one analytical method to assess goodness of fit procedures with reference to fitting univariate standard probability models to given data (8)

8. A) Describe Newton-Raphson method and list out any two advantages (7)  
B) Illustrate importance/application of Monte Carlo integration with an example (6)