

U.G. 4th Semester Examination - 2022**STATISTICS****[PROGRAMME]****Skill Enhancement Course (SEC)****Course Code : STAT-G-SEC-T-1B****(Monte Carlo Method)**

Full Marks : 25(20+5)

Time : 2 Hours

*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.*

1. Answer any **two** questions: $5 \times 2 = 10$
- Explain the necessity of Monte Carlo technique.
 - Illustrate how you can find an approximate volume of an uneven 3D shape using Monte Carlo method.
 - What do you mean by detailed balance in Markov chain?
 - Describe Gibbs sampling technique.

2. Answer any **one** question: $10 \times 1 = 10$
- Briefly describe the implementation issues of a Markov chain.
 - Consider the statement: "If X follows standard normal distribution then the probability of X lying in $(-1, 1)$ is almost 68%." How will you justify this statement without using the normal table?

[Internal Assessment: 5]