

# Simulation and modelling essay sample



**ASSIGN  
BUSTER**

1. Generate 20 random numbers and solve the following integrals by monte-carlo (i) (ii)

2. A piece of equipment contains four identical tubes and can function only if all the four are in working order. The lives of tubes has approximately uniform distribution from 1000 to 2000 hours. The current maintenance practice is to replace a tube when it fails. Equipments has to be shut down for 1 hr for replacing a tube, the cost of one tube is sh 100, while the shut down time cost sh 200 per hour. Simulate the system for about 6000 hrs of run and find the maintenance cost using the following random numbers:

0. 8, 0. 2, 0. 6, 0. 3, 0. 1, 0, 0. 8, 0. 9, 0. 2, 0. 8, 0. 3, 0. 7, 0. 4, 0. 8, 0. 5, 0. 6, 0, 0. 4, 0. 9

3. A baker is trying to determine how many dozens of bread to bake each day. The probability distribution of the number of customers is as follows.

Number of customers: 10 121416

Probability: 0. 350. 300. 200. 15

Customers order 1, 2, 3 or 4 dozen bread according to the following distribution

Number of order/customers: 1 234

Probability: 0. 40. 30. 20. 1

Bread sells for sh 60 per dozen and cost sh 42 per dozen to make.

The breads not sold at the end of the day are disposed off at half price.

Generate uniformly distributed random numbers and determine by

simulation the system for 20 days the dozen of bread which should be baked.

4. A newsstand can buy a daily newspaper for sh 50 each and sell it for sh 85. The unsold copies if any can be disposed off as waste paper at sh 20 each. The estimated daily demand distribution is as follows

Demand (no of copies)probability

1000. 03

1100. 07

1200. 19

1300. 28

1400. 20

1500. 10

1600. 05