

B.SC. (I. T.) SEM. - V (2011 COURSE) : WINTER - 2017
SUBJECT: SIMULATION & OR

Day: **Friday**
Date: **29/12/2017**

W-2017-0878

Time: **10.00 AM TO 01.00 PM**
Max. Marks: 80

N.B.:

- 1) **Q. No. 1 is COMPULSORY.**
- 2) Attempt any **FIVE** out of remaining questions.
- 3) Figures to the right indicate **FULL** marks.

- Q.1 a)** Briefly list the advantages and limitations of simulation. **(07)**
b) A company manufactures around 200 scooters per day. Depending upon the availability of raw material and other conditions, the daily production has been varying from 196 to 204 scooter, whose probability distribution is as given below: **(18)**

Production per day	196	197	198	199	200	201	202	203	204
Probability	0.05	0.09	0.12	0.14	0.20	0.15	0.11	0.08	0.06

The finished scooters are transported in a specially designed three tier lorry that can accommodate only 200 scooters. Using the following random numbers, simulate the process to find out the average number of scooters waiting in the factory per day and average number of empty spaces on the lorry per day.
Random Numbers: 82, 89, 78, 24, 53, 61, 98, 45, 06, 23, 50, 77, 27, 54, 10.

- Q.2 a)** For the following mixed LCG, compute Z_i values to cover the entire cycle: **(08)**
 $Z_i = (13Z_{i-1} + 11) \text{ mod } 16, Z_0 = 1$
b) For the above LCG compute Z_{100} **(03)**
- Q.3** State and explain the objectives of simulations in manufacturing. **(11)**
- Q.4** State and describe desirable features for Simulation software. **(11)**
- Q.5** What are the common sources of randomness in a manufacturing system? Discuss briefly. **(11)**
- Q.6 a)** State and briefly explain three parameters used for defining probability distribution. **(03)**
b) Discuss possible applications of at least three discrete distributions. **(08)**
- Q.7** An emergency room in a hospital is to be simulated. State whether it will be a case of **(11)**
i) Continuous or Discrete simulation
ii) Static or Dynamic simulation
iii) Deterministic or stochastic simulation
Give reasons to support your answer.
- Q.8** Draw and explain logic flow chart for "Arrival Routine" in a queuing model. **(11)**

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