

B.SC. (I. T.) SEM. - V (2011 COURSE) : SUMMER - 2018

SUBJECT: SIMULATION & OR

Day: **Wednesday**
Date: **30/05/2018**

S-2018-0985

Time: **02.30 pm to 05.30 pm**
Max. Marks: 80

N.B.:

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

Q.1 The sales pattern of a weekly magazine of a typical shop is as shown below: **(25)**

Weekly Demand (copies)	Probability
0 to 100	0.07
100 to 200	0.12
200 to 300	0.14
300 to 400	0.19
400 to 500	0.18
500 to 600	0.09
600 to 700	0.07
700 to 800	0.07
800 to 900	0.05
900 to 1000	0.02

Shopkeeper buys magazine for Rs. 20 per copy and sells it for Rs. 30 per copy. He returns unsold copies of the magazine to the publisher and gets Rs. 16 per copy from the publisher. At present the shopkeeper orders 400 copies of magazines per week.

Simulate operation of the shop for a period of 20 weeks, ordering 400 copies per week. Compute returns, lost sales and profit/loss for a period of 20 weeks. Allocate random numbers to generate the demand pattern based on the following table of random numbers. (Use random number 00 for week 1, 27 for week 2 and so on)

00	27	74	69	32	17	98	57	71	51
03	96	15	13	56	15	83	62	32	17

Q.2 a) For the following mixed LCG, compute Z_i for enough values of $i \geq 1$ to cover the entire cycle. $Z_i = (13Z_{i-1} + 11) \text{ mod } 16$ **(08)**

b) For the above LCG find Z_{100} . **(03)**

Q.3 State and describe the desirable features of the simulation software. **(11)**

P. T. O.

- Q.4** What is Monte Carlo Simulation? With the help of a schematic diagram explain the steps involved in solving simulation problem using Monte Carlo Simulation. **(11)**
- Q.5** State and explain three parameters used for defining probability distributions. **(11)**
- Q.6** Explain 'Calendar Time' approach to modeling machine up times. How is it different from 'Busy Time' approach? State advantages and disadvantages of both. **(11)**
- Q.7** State and explain various objectives of simulation in manufacturing. **(11)**
- Q.8** What are advantages and limitations of simulation? **(11)**

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