Suman Saha

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION- FEBRUARY 2020
B.Tech IV Semester

COURSE CODE: 18B11CI413   MAX. MARKS: 15

COURSE NAME: Modeling and Simulation Technique

COURSE CREDITS: 02   MAX. TIME: 1 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

1. Write short notes of the followings: MARKS[1x5]
   a. Conceptual model and simulation model
   b. Role of modeling and simulation
   c. Observation interval
   d. Entity interaction
   e. State variable

2. How to simulate random behavior of a variable? Explain linear congruential method and inverse transform method for random generator.   MARKS[1+2+2]

3. The following data yield the arrival times and service times that each customer will require, for the first 13 customers at a single server queue system. Upon arrival, a customer either enters service if the server is free or joins the waiting line. When the server completes work on a customer, the next one in line (i.e., the one who has been waiting the longest) enters service.

   Arrival Times: 12 31 63 95 99 154 198 221 304 346 411 455 537
   Service Times: 40 32 55 48 18 50 47 18 28 54 40 72 12

   (a) Determine the departure times of these 13 customers.
   (b) Determine the departure times of these 13 customers under the new assumption that when the server completes a service, the next customer to enter service is the one who has been waiting the least time.   MARKS[2+3]