

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-3 EXAMINATION (May 2019)
B-Tech (6th SEM)

Course Code: 16B22CI621

Max. Marks: 35

Course Name: DATA ANALYSIS AND SIMULATION TECHNIQUES

Course Credit: 4

Max. Time: 2 HOURS

Note: All questions are Compulsory

1. [CO-1] Vehicles arrive at a toll booth at an average rate of 300 per hour. Average waiting time at the toll booth is 10s per vehicle. If both arrivals and departures are exponentially distributed, what is the average number of vehicles in the system, average queue length, the average delay per vehicle, the average time a vehicle is in the system? [5]
2. [CO-4] a) What is Fishbone Chart? Describe with example and diagram. [2]
b) What are the steps of Pareto Analysis? Give an example how will you make weighted Pareto Chart? [3]
c) Compare Performance-Related Operating Policies vs Performance-Related Resource Policies. [2.5]
d) What is your suggestion for data collection? [2.5]
e) Compare Calibration vs Verification vs Validation with realistic examples. [4]
f) What is Turing test? [1]
3. [CO-5] Generate the 30 numbers using the recurrence relation
$$X_n = 3X_{n-1} \bmod 31 \text{ where } X_0 = 15$$

Use the Kolmogorov-Smirnov method to test the randomness of 21st to 30th numbers of the sequence generated by the formula [10]
4. [CO-2,3,6] Write Short Notes on [1x5=5]
a) Quasi-continuous Simulation
b) MOLAP
c) Type II error
d) System
e) Integrity related with SimEthics