AMMT25 MODELING AND SIMULATION

UNIT-1 SYSTEM AND SYSTEM ENVIRONMENT

1.1 Component of a System- Continuous and discrete systems- Types of model;

1.2 Steps in Simulation study; Simulation of an event occurrence using random number table

1.3 Single server queue- two server queues – inventory system.

UNIT-2 RANDOM NUMBER GENERATION

2.1 Properties of random numbers- Generation of Pseudo- random numbers- techniques of generating pseudo random numbers;

2.2 Test for random numbers: the Chisquare test-the kolmogrov Smirnov test- Runs test- Gap test-poker test.

UNIT-3 RANDOM- VARIATE GENERATION 9

3.1 Inverse transform technique for Exponential, Uniform, triangular, weibull, empirical, uniform and discrete distribution,

3.2 Acceptance rejection method for Poisson and gamma distribution;

3.3 Direct Transformation for normal distribution.

UNIT-4 ANALYSIS OF DATA

4.1 Analysis of simulated Data- Data collection, identifying the distribution,

4.2 Parameter estimation, goodness of fit tests,

4.3 Verification and validation of simulation models.

UNIT-5 SYSTEM IDENTIFICATION

5.1 Concepts of System Identification-

5.2 Identification using normal operating records (Integration method)

5.3 Identifiability conditions- System order determination

References Books:

1. Geoffrey Gorden, "System Simulation", Prentice Hall of India, 2003.
2. Narsingh Deo., "System Simulation with Digital Computer", Prentice Hall of India, 2003.
3. Birta, "Modelling and Simulation: Exploring Dynamic System Behaviour", Springer, Indian Reprint, 2010