R09

Code No: D3301

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH II SEMESTER EXAMINATIONS, APRIL/MAY 2012
SIMULATION MODELLING OF MANUFACTURING SYSTEMS
(ADVANCED MANUFACTURING SYSTEMS)

Time: 3hours **Max.Marks:60**

Answer any five questions
All questions carry equal marks
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1.a) Explain the characteristics of different types of simulation models. Discuss their suitability.
b) State the advantages and disadvantages of simulation.

2.a) Define the following terms:
i) Null hypothesis
ii) Type I & type II errors.
b) The mean weekly sale of the Yum Yum chocolate bar in a chain of candy stores was 146.3 bars per store. After an advertising campaign the mean weekly sales in 22 stores for a typical week increased to 153.7 and showed a standard deviation of 17.2. Is the evidence conclusive that the advertising was successful? You are given that for 21 degree of freedom, the value of t is 2.08 at 5% level of significance.

3. Explain the three step approach for developing the valid and credible model with a suitable example.

4. List out statistical procedures for validation of out put data of simulation and real world data. Explain any two in detail.

5.a) "Modeling of random element to theoretical distribution is the most preferable approach compared to other approaches". Justify
b) Explain the characteristics and suitability of the following distributions
i) Exponential
ii) Weibul &
iii) Binomial.

6. Explain the inverse transform method for generating random variates from a given distribution. Discuss its advantages and limitations.

7.a) State the desirable properties of software packages.
b) Compare the different simulation languages.

8.a) Explain replication method for the output data analysis and Compare it with batch means method.
b) Assembled television sets are inspected for volume control in an assembly line. The arrival rate of the television sets follows Poisson distribution and it is 21 sets per hour. The inspection rate also follows Poisson distribution and it is 25 sets per hour. In front of the inspection station, waiting space is sufficient for a maximum of 6 television sets. Simulate for arrival of 10 television sets and estimate the average waiting number of television sets in the system.

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