BE / IT / VII (Rev) 25/5/12
Simulation & Modelling

34 : 1st half.12-AM(x)

Con. 3928-12. (REVISED COURSE) GN-6434

(3 Hours) [Total Marks : 100

N.B. (1) Question No. **1** is **compulsory**.
(2) Out of remaining questions attempt any **four**.
(3) Assume suitable **data** wherever **required**.
(4) Use of **statistical table** is **allowed**.
(5) **Figures** to the **right** in bracket indicate **full** marks.

1. (a) State when simulation is appropriate. **5**
(b) Define :— System and Model **5**
(c) Explain properties of Poisson process. **5**
(d) Distinguish between :— **5**
(i) Activity and Delay
(ii) Random Numbers and Random Variant

2. (a) Explain steps in simulation study along with the flow chart. **10**
(b) Explain Naylor and Finger validation approach. **10**

3. (a) Explain different types of simulation with respect to output analysis. **10**
(b) Explain in detail an evaluation and selection technique for simulation software. **10**

4. (a) Records pertaining to monthly number of job related injuries at Chemical Plant were being studied by an NGO. The value for the past 100 months were as follows :— **10**

Injuries per month	0	1	2	3	4	5	6	7
Frequency of occurance	30	20	15	05	06	10	04	10

Apply the Chi-square goodness of fit test to these data to test the hypothesis that the underlying distribution is Poisson. Use level of significance $\alpha = 0{\cdot}05$

(b) Explain overall structure of an event schedulling for simulation program with the help of necessary flow chart. **10**

5. (a) Explain in detail the method of batch means for interval estimation in steady state simulation. **10**
(b) Explain long run measures of Performance of Queueing systems. **10**

6. (a) Explain multiuser queueing system with suitable example. **10**
(b) Explain steps involved in development of useful model of input data. **10**

7. Write short notes on the following :— **20**
(a) Inverse Transform Technique
(b) Terminating and Non-Terminating Simulation
(c) Verification and Validation Process
(d) Features of GPSS.