

- i) Generate $U \sim U(0, 1)$ and set $i = 1$.
- ii) If $U \leq q(i)$, return $X = i$, otherwise go to step 3.
- iii) Replace i by $i + 1$ and go back to step 2.

5. a) Density function for a distribution is given by

$$f(x) = 1/\beta e^{-(x-\gamma)/\beta}, x \geq \gamma$$

$$= 0, \text{otherwise}$$

What parameters do you associate with it and why? Suggest and explain a method for generating random variate for this distribution.

- b) Given the following summary statistics for a continuous random variable, explain what conclusions can you draw for choosing a probability distribution to model it.

| | |
|----------|-------|
| Minimum | 0.054 |
| Maximum | 2.131 |
| Mean | 0.888 |
| Median | 0.849 |
| Variance | 0.210 |
| Skewness | 0.506 |

The data given corresponds to 200 observations.

- 6. a) What is queuing model? How it is useful for Simulation? Explain all different kind of Queuing Model in detail.
- b) What is discrete system simulation? Explain.
- 7. a) Explain in detail about Queuing theory, types of Queues and simulating Queuing systems with respect to event driven models.
- b) What is the difference between spectral analysis and time series analysis? Explain.
- 8. a) Design a supermarket simulation model.
- b) Explain the different techniques of simulation output analysis.

MEDC - 202**M.E./M.Tech., II Semester**

Examination, June 2014

Modeling And Simulation Of Computer*Time : Three Hours**Maximum Marks : 70*

Note : i) Attempt any five questions.

ii) All questions carry equal marks.

- 1. a) What do you mean by system modeling? Write difference between continuous and discrete systems?
- b) Differentiate between
 - i) Deterministic and Stochastic activities
 - ii) Static Physical Models and Dynamic Physical Models
 - iii) Static Mathematical Models and Dynamic Mathematical Models
- 2. a) Explain the simulation procedure of Inventory System.
- b) With suitable example explain about discrete time Markov processes.
- 3. a) Write short notes on simulation aspects of a poison process.
- b) Describe the simulation time advance mechanisms.
- 4. a) Explain a composite generator for $U(0,1)$ based on Shuffling. What are the relative advantages and disadvantages of the composite generators?
- b) Let X be discrete with probability mass function given as: $p(1)=p(2)=0.05$, $p(3)=p(4)=p(6)=0.1$ and $p(5)=0.6$. Let $q(i) = p(1)+p(2)+ \dots +p(i)$ with $i=1, 2, \dots, 6$. Explain what does the following algorithm do.