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Total Number of Pages : 02

B.Tech.
PET6J014

6th Semester Regular Examination 2017-18
TELECOMMUNICATION SYSTEM MODELLING & SIMULATION
BRANCH : ECE, ETC
Time : 3 Hours
Max Marks : 100
Q.CODE : C447

Answer Part-A which is compulsory and any four from Part-B.
The figures in the right hand margin indicate marks.

Part – A (Answer all the questions)

- Q1** **Answer the following questions: *multiple type or dash fill up type*** **(2 x 10)**
- a)** Speed and distance in traffic system are:
 - i) Entities
 - ii) Attributes
 - iii) Activities
 - iv) Environment
 - b)** Where the effects of the activity vary randomly over various possible outcomes, the activity is said to be:
 - i) Deterministic
 - ii) Stochastic
 - iii) Endogenous
 - iv) Exogenous
 - c)** In communication system what is Transmitting:
 - i) Entity
 - ii) Activity
 - iii) Environment
 - iv) None of the above
 - d)** Advance, Link, Mark and Queue blocks are used in which language:
 - i) Simscript
 - ii) GPSS
 - iii) Both of the above
 - iv) None of the above
 - e)** Which system / model applies deductive reasoning of mathematical theory to solve a model:
 - i) Dynamic model
 - ii) Static model
 - iii) Analytical model
 - iv) Numerical model
 - f)** Mathematical models are based on:
 - i) Analogy between such systems as mechanical and electrical
 - ii) Use symbolic notation and mathematical equations to represent a system
 - iii) All of the above
 - iv) None of the above
 - g)** In discrete system changes are:
 - i) Predominantly continuous
 - ii) Predominantly discrete
 - iii) Depend on the system
 - iv) None of the above

- h) Exogenous means
 - i) Pre decided Activities
 - ii) Activities of internal System
 - iii) Activities which are random
 - iv) Activities in the environment
- i) Entities of a system can vary
 - i) Time to time
 - ii) Place to place
 - iii) According to areas of interest
 - iv) According to technique used
- j) First step of modeling processs is
 - i) Defining goals
 - ii) Problem Formulation
 - iii) Validate Model
 - iv) Analyze Model

Q2 Answer the following questions: Short answer type (2 x 10)

- a) What is the significance of Modeling and Simulation?
- b) Monte Carlo simulation is a special case of stochastic simulation? Comment.
- c) What do you mean by System modeling?
- d) What is Flex-sim and Pro-model?
- e) What do you understand by the term Face Validity of a conceptual model?
- f) Differentiate between discrete and continuous systems.
- g) Differentiate between analytical models and numerical models.
- h) What is TES process?
- i) Define congestion in a queuing system, and describe its major characteristics.
- j) What is Monte Carlo Simulation?

Part – B (Answer any four questions)

- Q3 a) Briefly explain the process oriented and event oriented simulation tools. (10)
b) Explain combined linear congruential method for random number generation. (5)
- Q4 a) Explain the various tests used for testing random numbers for their desirable properties. (10)
b) Define random number. Explain statistical properties of random numbers with example. (5)
- Q5 a) Explain event scheduling / time advance algorithm with an example. (10)
b) Explain output analysis for termination simulation. (5)
- Q6 a) With a neat diagram explain model building, verification and validation. (10)
b) What are some pitfalls to guard against in simulation? (5)
- Q7 a) Point estimation is a measure of performance of a simulated system. Explain (10)
b) Discuss advantages and disadvantages of simulation systems. (5)
- Q8 a) With an aid of flow diagram explain various steps in a simulation study. (10)
b) What are pseudo random numbers? What are the problems that occur while generating pseudo random numbers? (5)
- Q9 a) Explain the following continuous distributions: (10)
 - i) Uniform distribution
 - ii) Exponential distributions
b) Briefly define any four concepts used in discrete event simulation. (5)