Student Registration Number

C

COURSE CODE: DCAP601
COURSE TITLE: Simulation and Modeling

Time Allowed: 3 hours **Max. Marks: 80**

1. *This paper contains 10 questions divided in two parts on 1 page.*

2. Part A is compulsory.

3. In Part B (Questions 2 to 10), attempt any 6 questions out of 9. Attempt all parts of the selected question.

4. *The marks assigned to each question are shown at the end of each question in square brackets.*

5. *Answer all questions in serial order*.

6. The student is required to attempt the question paper in English medium only.

PART A

Q1:

a) What do we mean by system simulation? [2]
b) Compare and contrast between discrete and continuous simulation. [2]
c) What are the characteristics and components of a system under study? [2]
d) What are the components of discrete event system simulation? [2]
e) Name the different simulation languages available and where they have been used? [2]
f) Discuss the difference between analog and digital simulation. [2]
g) What do you mean by stochastic simulation? [2]
h) Explain event to event model with suitable example. [2]
i) Elaborate the use of deterministic and stochastic variables. [2]
j) What do you mean by single server queuing systems? [2]

PART B

Q2: Discuss the application areas where simulation can be used. Also cite different examples to explain each application area. [10]

Q3: Discuss the simulation of activity network along with all the components that can be used in activity network. [10]

Q4: Discuss why Monte Carlo simulation and stochastic simulation have been used. Also discuss how both of them are different from each other. [10]

Q5: Fixed time step and event to event models are different. Draw flowcharts of both type of models and explain its application area. [10]

Q6: What are the rudiments of queuing theory? Discuss simulation of single server queuing system and explain how it is different from multi server queuing system. [10]

Q7: Discuss and explain the simulation process to elaborate how simulation needs to be carried out on the systems under study. [10]

Q8: The reservoir is to be constructed at a specified site. The curve of the projected demand for the water from the reservoir has been determined (from the expected growth pattern and the seasonal fluctuations). The input to the reservoir is from the river inflow and from the rainfall directly over the reservoir. The output consists of the seepage and evaporation losses, in addition to the water supplied to meet the projected demand. Discuss the system in detail. [10]

Q9: What do we mean by random numbers? What are the different random number generators available? [10]

Q10: Throw some light on the use of PERT and CPM. Discuss how they differ from each other. [10]