Roll No. | | | | | | | | | | | | | **Total No. of Pages : 01**

Total No. of Questions : 08

M.Tech (ECE) (Sem.–2)

QUEUING THEORY

Subject Code : MTEC-PE4E-18

M.Code : 76269

Date of Examination : 19-12-2022

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

INSTRUCTIONS TO CANDIDATES :

1.Attempt any FIVE questions out of EIGHT questions.

2.Each question carries TWELVE marks.

Q1. a) What is a random process? When do you say a random process is a random variable?

b) Explain Birth Death process with suitable example.

Q2. a) What is the probability that a customer has to wait more than 15 minutes to get his service completed in M/M/l queuing system, if λ= 6/hr and μ= 10/hr?

b) Describe general input G/M/c model in detail.

Q3. Describe M/M/l Queue model in detail with suitable example

Q4. Patients arrive at a clinic according to Poisson distribution at a rate of 30 patients per hour. The waiting room cannot accommodate more than 14 patients. Examination time per patient is exponential at the rate of 20 per hour.

a) Find the effective arrival rate at the clinic.
b) What is the probability that an arriving patient will not wait?
c) What is the expected waiting time until a patient is discharged from the clinic?

Q5. a) Explain characteristics of queuing processes in detail.

b) Discuss Poisson process and Exponential distribution with suitable example.

Q6. Explain Open Jackson networks and Non-Jackson networks in detail.

Q7. a) Distinguish between discrete parameter and continuous parameter Markov chains.

b) Discuss the characteristics of queuing system in detail.

Q8. a) Explain the need for the extension of Jackson networks in detail.

b) Describe the concept of data book keeping for queues in detail.

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.