

Part-III

Only Long Answer Type Questions (Answer Any Two out of Four)

- Q3** Explain Frequency Domain System of analysis and design. What are its advantages over Time Domain System? **(16)**
- Q4** Describe the Linear Congruential Method and Mixed Congruential Method to generate uniform random numbers. **(16)**
- Q5** The inter-arrival time of customer and service time in minutes for a single server queuing system is given below. **(16)**
 Inter-arrival time: 41, 37, 64, 22, 52, 30, 28, 11, 35
 Service time: 28, 26, 53, 47, 31, 39, 42, 52, 23, 30
 Draw simulation table and do hand simulation for above data to determine: Percentage of idle time of server, average length of queue of customers in the system and average time of a customer spends in the system.
- Q6** Perform Chi-square test to verify if the data given below resembles Poissons distribution for 0.01 level of significance. **(16)**

Variable (x)	Frequency (f)	Variable (x)	Frequency (f)
0	4	6	7
1	10	7	4
2	17	8	2
3	23	9	1
4	18	10	1
5	13		

Values of χ^2 for different degree of freedom are given below.

Degrees of freedom	5	6	7	8	9	10
Values of χ^2	15.1	16.8	18.5	20.1	21.7	23.2