

**B. E. ELECTRONICS AND TELE-COMMUNICATION ENGINEERING
THIRD YEAR, SECOND SEMESTER EXAMINATION, 2018**

COMMUNICATION SWITCHING SYSTEMS

Time : 3 Hours

Full Marks :100

ANSWER ALL THE FIVE QUESTIONS

(All parts of the same question must be answered at ONE Place only)

- Q1. (a) In a telephone network, distinguish between 6+5+4+5=20
- i) Local network
 - ii) Junction network
 - iii) Toll network
- (b) Draw and label a hierarchical network structure in a telecommunication network system.
- (c) Define the following terms in connection with telephone circuit operation.
- i) Holding time and busy hour
 - ii) Grade of service
 - iii) Availability
 - iv) Erlang- the traffic measure
- (d) During busy hour 1000 calls were offered to a group of trunks and five calls are lost. The average call duration is 5 minutes. Find
- i) The traffic offered
 - ii) The traffic carried
 - iii) The traffic lost
 - iv) The grade of service
 - v) The total period of congestion
- Q2. (a) What is meant by pure chance traffic? 4+12+4=20
- (b) Derive an expression for first Erlang distribution that is loss probability of a lost call system having N trunks when offered traffic is A. State the assumptions made in the derivation of above loss probability.
- (c) A group of five trunks is offered 2E traffic. Find the probability of a lost call following first Erlang distribution.
- Q3. Write note on: 5 X 4 = 20
- i) Time Switch and Space Switch
 - ii) Stored program control (SPC)
 - iii) Routing
 - iv) Network topology

Q4. (a) What are the different types of switching scheme for data switching network? Explain the salient features of each type. Compare their similarities and differences.

(b) Why does packet congestion occur in packet switched network? How does congestion affect the network performance namely throughput and delay? Describe the techniques adopted for prevention and removal of packet congestion.

10+10=20

Q5. (a) Describe the construction, operational principle and frequency range of operation of the following network link media:

- i) Co-axial cable
- ii) Fiber optic cable

(b) What do you understand by ISO-OSI model of network architecture? What are the different layers of this model? State briefly various network functions accomplished in each layer.

8+12=20