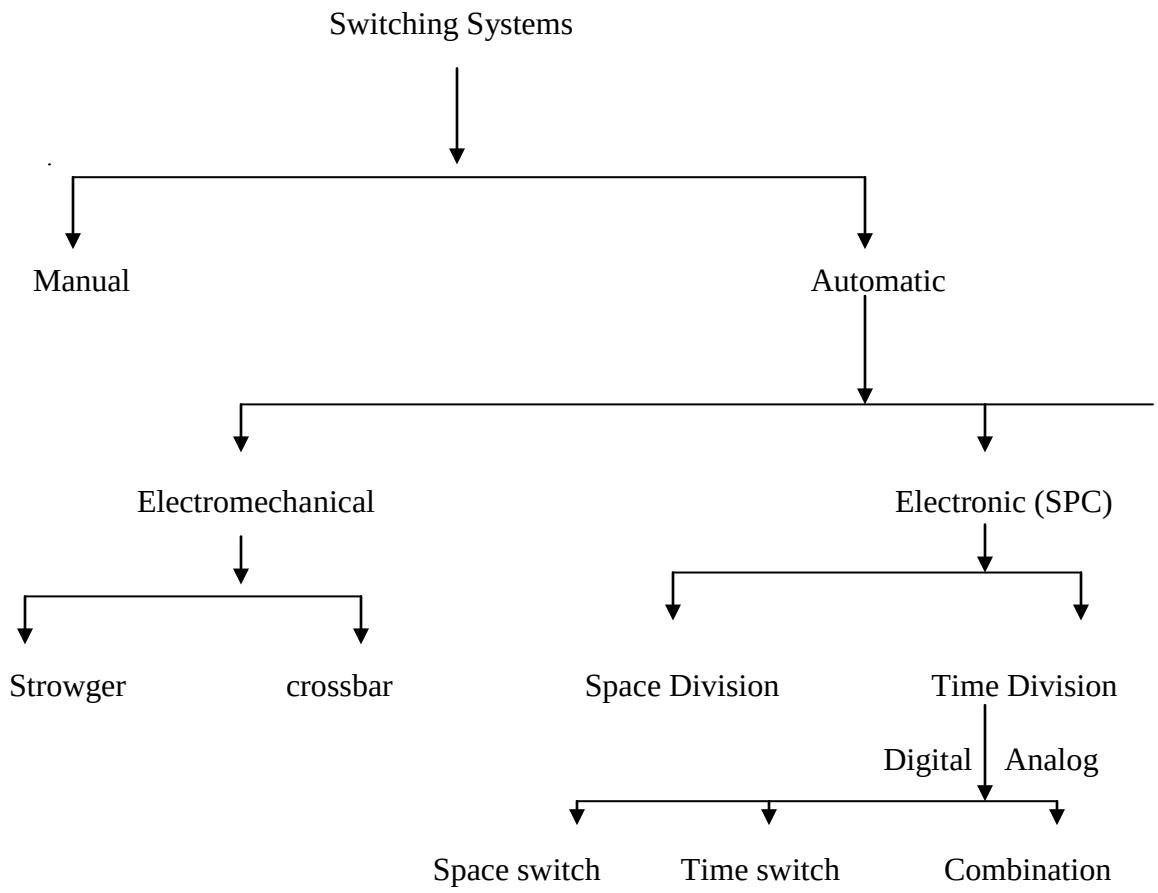
Q2 (a) Explain briefly various types of switching systems.

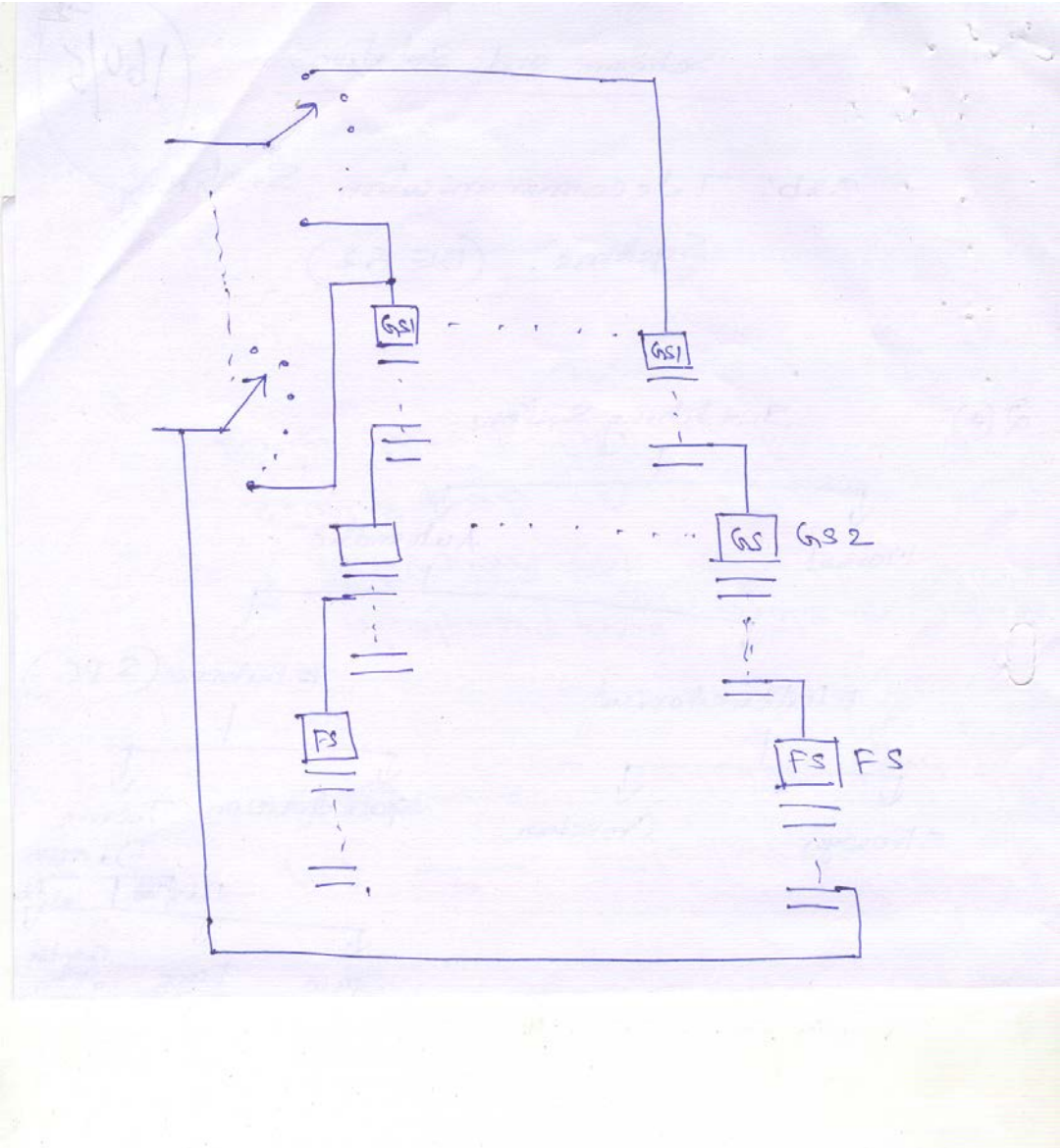
Answer



Q2 (b) Design 10,000 line exchange and show the connection between subscriber 5219 to 8762.

Answer
4 Stages:

1. Pre selector
2. Group selector 1
3. Group selector 2
4. Final selector



Q2 (c) Explain the operation of reed relay with the help of a neat diagram.

Answer Page Number 79 of Text Book I

Q3 (a) What is congestion? How GOS is affected by congestion?

Answer

The condition in telephone exchange where all trunks in a group are busy and it can accept no further calls is known as congection.

All attempts to make call over a congested group of trunks are lost are grade of since is defined as

B = Number of calls lost/No of calls offered

Hence proposrtion of the calls lost or delet due to congesion is major of GOS(grey of service.)

Q3 (b) During busy hour, 900 calls were offered to a group of trunks and 3 calls were lost. If the average call duration is 3 min, find:
(i) Traffic Offered (ii) Traffic Carried
(iii) Traffic Lost (iv) Grade of Service

Answer

(i) A=Ch/t=300*31/60=45E
(ii) Traffic Carried = (900-3) h /T=897*3/60=44.85E
(iii) Traffic lost =3*3/60=0.15
(iv) B=3/900 =0.00333

Q3 (c) A group of 20 Trunks provide a GOS of 0.01, when offered 12E Traffic, then how much is the GOS improved if one extra trunk is added to the group.

Answer

1. $E_{1,}$ 21(12) = 12. $E_{1,}$ 20(12)/21+12 $E_{1,}$ 20(12)
   =12*0.01/21+12*0.01=0.0057

2. $E_{1,}$ 21(12) =0.01=12 $E_{1,}$ (12)/20+12 $E_{1,}$ 19(12)
   0.2+0.12 $E_{1,\ 19\ (}$12) =12 E1, 19 (12)
   $E_{1,\ 19}$ (12) =0.017

Q4 (a) With neat sketch, explain various grading system.

Answer

Grading System: with big explanation

1. Progressive grading
2. Skipped
3. Homogeneous

Q4 (b) Design a grading for connecting 20 Trunks to switches having 10 outlets.

Answer The number of graded group g=2N/k=2*X20/10=4
Factors are 1, 2, 4
S+d+q=10
4s+2d+q=20
∴. 3s+d =10
s=1: d=7, q=10-8=2
s=2: d=4, q=10-6=4
s=3: d=1, q=10-4=6
D_1 =6+5=11
D_2 =2+0=2----------→best
D_3 =2+5=7

4	8
3	7
2	6
1	5

10	12	14	16
9	11	13	15

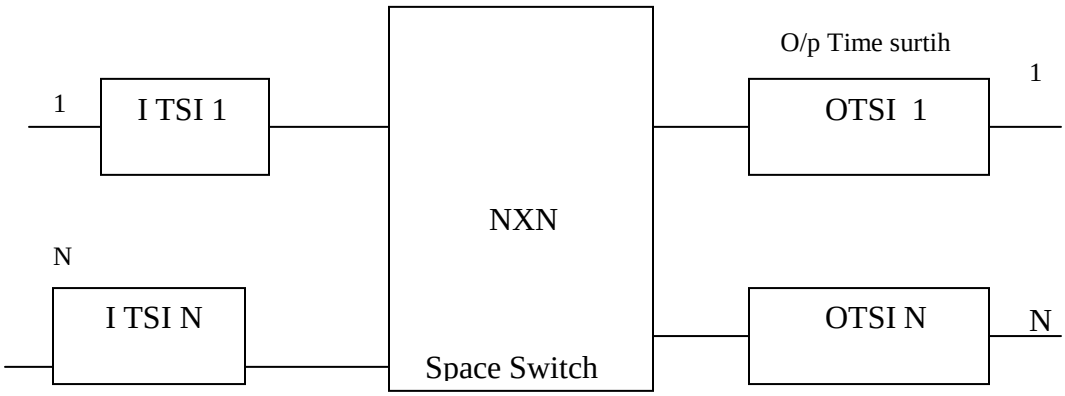
17	18	19	20

Q5 (a) Briefly explain the time division space switch with the help of neat diagram. Also discuss its merits.

Answer Figure 6.4, Page Number 190 of Text Book - II

Q5 (b) Describe 3 stage TST combination switching network.

Answer



Q6 (a) Explain processor configurations used in SPC system.

Answer

i. Worker and standby
ii. Load sharing
iii. Synchronous Operation

Q6 (b) Discuss the steps involved in making a local call in signal exchange.

Answer Page Number 182 of Text Book - I

Q7 (a) What is Inband Signalling System and explain its operation with the help of a neat diagram.

Answer Page Number 210 of Text Book - I

Q7 (b) With neat sketch, explain Multi Framing Process of 30 channel PCM system.

Answer Page Number 213 of Text Book - I

Q8 (a) Write short note on Datagram and virtual circuits.

Answer Page Number 242 of Text Book - I

Q8 (b) Compare BUS and RING networks.

Answer

1. In Bus network, highway can be passive hence more reliable. The failure one or more nodes does not interrupt service for others.

2. Additional nodes can be connected to a bus without disrupting network.
Adding nodes can not be connected ring without taking network out of service.

3. A bus n/w can be twisted pair or Co-axial cable because of both directions.

4. Bus n/w can suffer from signal reflection at impedance irregularities.

5. Fault isolation is difficult in bus

Q9 Write short note on the following:

(i) Automatic Alternative Routing
(ii) Cellular Networks

Answer
(i) Page Number 283 of Text Book I
(ii) Page Number 267 of Text Book I

Text Books

1. Telecommunications Switching, Traffic and Networks, J.E.Flood, Pearson Education, 2006.

2. Telecommunication Switching Systems and Networks, Thiagarajan Viswanathan, Prentice Hall of India Pvt. Ltd, 2006.