Total No. of Questions : 6] SEAT No. :

P596

[Total No. of Pages : 2

BE/Insem/APR - 202
B.E. (E & TC)
MOBILE COMMUNICATION
(2015 Pattern) (Semester - II)

Time : 1 Hour] *[Max. Marks : 30*

Instructions to the candidates :

1) ***Answer Q1 or Q2, Q3 or Q4, Q5 or Q6.***
2) ***Neat diagrams must be drawn wherever necessary.***
3) ***Figures to the right indicate full marks.***
4) ***Assume suitable data, if necessary.***

Q1) a) With neat diagram, describe the working of Time Division Switching for Voice traffic. **[4]**

b) Define Grading mechanism. Explain the significance of Grading to calculate traffic capacity for the required grade of service. **[4]**

c) Calculate unavailability of single and dual processor system for 20 yrs, given that MTBF = 2200 hours and MTTR = 4 hours. **[2]**

OR

Q2) a) List and brief various Call processing functions to control switching functions. **[5]**

b) Classify Switching techniques for Data traffic. Explain with neat diagram, the operation of any one switching technique to carry Data traffic. **[5]**

Q3) a) During the busy hour, 1500 calls were offered to a group of trunks and six calls were lost. The average call duration was 5 minutes. Find Traffic offered, Traffic carried, traffic lost, Grade of Service and total duration of the periods of congestion. **[5]**

b) Draw neat diagram for 3-stage networks and calculate number of switching elements required with N incoming and outgoing trunks. **[5]**

P.T.O.

OR

Q4) a) Explain with neat diagram Queuing system and brief following assumptions w.r.t Traffic Engineering : **[6]**

i) Pure-Chance traffic

ii) Statistical equilibrium

iii) Full availability

iv) Calls which encounter congestion are lost.

b) Describe the working operation of CCITT no.7 signaling system. **[4]**

Q5) a) With neat diagram, explain in brief concept of Frequency reuse, Cell Splitting and Cell sectoring for mobile system. **[5]**

b) If a total of 25 MHz of bandwidth is allocated to mobile system which uses 50 KHz full duplex channels. If 1 MHz of the allocated spectrum is dedicated to control channels. Determine distribution of voice and control channels in each cell if a system uses 12-Cell reuse. **[3]**

c) Draw neat figure to illustrate handoff scenario at cell boundary. **[2]**

OR

Q6) a) List and brief three basic propagation mechanism that impact propagation in mobile communication system. **[5]**

b) Assume a receiver is located at 3 km from a 5 W transmitter. The carrier frequency is 900 MHz, free space propagation is assumed with transmitter and receiver antenna gain of 1 and 2. Find: **[3]**

i) Power at the receiver

ii) Magnitude of E-field at receiver antenna and

iii) rms voltage applied to the receiver input impedance of 50 Ohm, matched to the receiver.

c) List factors influencing small scale fading. **[2]**

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