

Total No. of Questions : 12]

SEAT No. :

P777**[4458]-581**

[Total No. of Pages : 3

B.E. (E & TC) (Semester - I)
MOBILE COMMUNICATION
(2008 Course) (Elective - II (d))

*Time : 3 Hours]**[Max. Marks : 100**Instructions to the candidates:*

- 1) Answer 3 questions from Section - I and 3 questions from Section - II.
- 2) Answers to the two sections should be written in separate books.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right indicate full marks.
- 5) Use of logarithmic tables slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.
- 6) Assume suitable data, if necessary.

SECTION - I

- Q1)** a) Discuss the evolution from 1G to 2G, 2.5G IN CASE OF CELLULAR NETWORK BASED ON TDMA. Discuss the strategies adopted by different network operators towards third generation? **[10]**
- b) Explain why a hexagon has been chosen to represent a cell in Cellular system? **[4]**
- c) Explain the concept of "Frequency Reuse" in Cellular Communications. What are the advantages of the same? **[4]**

OR

- Q2)** a) Derive an expression for signal to interference ratio (S/I) for 7 cell cluster. **[9]**
- b) Explain with appropriate diagram Cell Splitting? Give the merits and demerits of cell splitting. **[9]**
- Q3)** a) A hexagonal cell with four cell system has a radius of 2km and a total of 50 channels are used in the system. If the load per user is 0.03 Erlangs, and $v = 2$ call/hour, compute the following for Erlang C system by assuming 5% probability of delay with $C = 15$ and traffic intensity = 9.0 Erlangs. **[8]**

P.T.O.

- i) How many users per square kilometer this system will support?
- ii) What is the probability that a call will be delayed for more than 10sec?

b) What is fading? Explain Slow and Fast Fading? [8]

OR

Q4) a) A hexagonal cell with 4 cell cluster has a radius of 1.387km. A total of 60 channels are used Within the entire system. If the load per user is 0.029 E and rate of arrival of calls is 1 per hour, calculate the number of users per square kilometer this system will support if GOS is 5%. [6]

b) Derive the expression for Impulse response for the multipath channel.[10]

Q5) a) Draw the block diagram for offset QPSK transmitter and receiver. State the expression for error probability of QPSK. [8]

b) Write a short note : [8]

i) Adaptive Equalizer.

ii) Rake receiver.

OR

Q6) a) Classify the equalizers and Explain the linear Equalizer in detail. [8]

b) Define Space diversity? Explain Selection diversity and Feedback diversity in detail. [8]

SECTION - II

Q7) a) What are the selection of speech coders for mobile communication. [8]

b) Compare SDMA and OFDMA. [8]

OR

Q8) a) Draw Functional details of linear predictive coder and decoder. [8]

b) Give the merits and demerits of FDMA and TDMA? How CDMA is advantages than FDMA and TDMA. [8]

Q9) a) Draw the GSM frame structure and explain each frame in detail. [9]

b) Classify GSM channels? Explain Traffic Channels (TCH) and Control Channels (CCH) in GSM. What are the different types of CCH in GSM.[9]

OR

- Q10)** a) Explain in detail the architecture of GSM. [9]
b) Give the call setup and termination flow detail in GSM. [9]

- Q11)** a) Explain different types of Handoff in CDMA. [8]
b) Explain the forward and reverse link structure in CDMA. [8]

OR

- Q12)** a) Draw the block diagram for spreading and modulation in CDMA. [8]
b) Draw and explain the IS-95 architecture in CDMA. [8]



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