A 1318

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Sixth Semester

Information Technology

IF 365 — MOBILE COMMUNICATION

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is meant by Mobile Assisted Handoff?

2. If S/I of 15 dB is required for satisfactory forward channel performance of a cellular system, what is the cluster size that should be used for maximum capacity if the path loss exponent is 3?

3. If the SNR of a wireless communication link is 20 dB and the RF bandwidth is 30 KHz, determine the maximum theoretical data rate that can be transmitted.

4. Draw the basic block diagram of a DPSK transmitter.

5. Assume four brands diversity is used, where each branch receives an independent Rayleigh fading signal. If the average SNR is 20 dB, determine the probability that the SNR will drop below 10 dB.

6. Write short notes on 'antenna tilting effect'.

7. Write the functions of SIM.

8. Will GSM only phones work in GPRS network? Explain.

9. What is meant by retrograde orbit?

10. List the considerations necessary to characterize propagation of Mobile Satellite Service Links.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Prove that for a hexagonal geometry, the co-channel reuse ratio is $Q = \sqrt{3N}$ where $N = i^2 + ij + j^2$. (8)

(ii) Write the concept of cellular and explain with an example. (8)

Or

(b) (i) Explain the capacity improvement techniques used in cellular system. (10)

(ii) List the types of non-co-channel interferences and write short notes on them. (6)

12. (a) (i) Explain FM modulation methods. (8)

(ii) Explain FM detection techniques. (8)

Or

(b) (i) Explain the principle of GMSK. Also draw the block diagram of a GMSK transmitter. (8)

(ii) Draw the block diagram of a GMSK receiver and explain. (8)

13. (a) (i) Write the basic concept of feedback diversity. (8)

(ii) Draw the generalized block diagram for space diversity and explain. (8)

Or

(b) (i) Explain the application of smart antenna is wireless communication. (8)

(ii) Discuss the path loss prediction over willy terrain. (8)

14. (a) (i) Explain the features of TDMA and FDMA. (8)

(ii) Explain the features of CDMA. (8)

Or

15.

(b) (i) Discuss GSM system architecture. (8)

(ii) Explain the reverse IS-95 channel modulation process for in single user. (8)

15. (a) Compare the orbital features of geostationary and Low Earth Orbits. (16)

Or

(b) Explain the concept of integrated mobile communication networks using satellites. (16)
