

FACULTY OF ENGINEERING
B.E. 4/4 (ECE) I Semester (Supplementary) Examination, April 2006
MODERN COMMUNICATION SYSTEMS

Time: Three Hours]

[Maximum Marks : 75

Answer ALL questions of Part - A.
Answer FIVE questions from Part - B.

PART - A
(Marks : 25)

1. Briefly explain the stored program control of an electronic exchange.
2. What do you understand by an S - T - S switch.
3. Distinguish between the axial rays and skew rays in optical fibers.
4. Define the response time and quantum efficiency of a photodetector.
5. Draw the topology of a simplex linear bus consisting of N uniformly spaced stations.
6. Present the basic concept of microwave SCM system.
7. List the advantages and disadvantages of frequency reuse.
8. Define CCI and ACI.
9. State the important difference between the GSM and CDMA cellular networks.
10. Classify multiple access techniques for wireless communications.

PART - B
(Marks : 5×10 =50)

11. (a) What is TSI? Explain it for switching PCM inlets?
(b) A three stage network is designed with following parameters :
 $M = N = 512, p = q = 16, \alpha = 0.7$. Calculate the blocking probability of the network for $S = 16, 24$ and 31
12. (a) Draw the block diagram and explain the working of fiber optic communication system. List 3 prime advantages of it.
(b) Describe different signal attenuation mechanisms in optical fibers.
13. (a) A step index multimode fiber with NA of 0.2 supports 1000 modes at 850 nm wavelength. Find the core diameter. How many modes the fiber support at 1550 nm?

(b) Draw the structure and explain the working of an injection Laser diode.

14. (a) Explain the optical pumping phenomenon in optical amplification.

(b) Discuss about optical LAN.

15. (a) Illustrate the onset and completion of Hand off scenario in omniscell communications. List different types of handoffs.

(b) Present the structural and radiation pattern details of antennas employed at cell sites and mobile stations.

16. (a) Draw the radio subsystem of GSM network and explain different components.

(b) Give the basic features and key functional elements of FPLMTS.

17. Write short notes on :

(a) Traffic theory of telephone networks

(b) Cell splitting

(c) Multiple access schemes.