Printed Pages – 03 EC – 806

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3051 Roll No.

B.Tech.

EIGHTH SEMESTER EXAMINATION, 2004-2005

COMMUNICATION SYSTEM PRACTICE

ne : 3 Hours *Total Marks : 100*

Note : *(i) Attempt ALL questions.*

(ii) All questions carry equal marks.

1. Attempt *any two* parts of the following :

(a) (i) Discuss briefly the operation of a high-level AM transmitters.

(ii) Discuss briefly the operation of an AM receiver using Phase Locked Loop. (5+5)

(b) (i) Discuss briefly, the operation of a balanced modulator circuit.

(ii) Discuss briefly the operation of a Costas receiver. (5+5)

(c) (i) What do you mean by a *reactance modulator* ? Discuss the basic principle of operation of a reactance modulator using a FET circuit.

(ii) Discuss briefly the operation of the Crosby direct FM transmitter system. (5+5)

000479

2. Attempt *any two* parts of the following :

(a) (i) Explain the purpose of the induction coil in a telephone station.

(ii) Explain the term full duplex as applied to telephony. (5+5)

(b) (i) Compare between the nature of signals produced on the subscriber's loop by a pulse dialer and Touch Tone dialer.

(ii) Explain with the aid of equivalent circuits the operation of a four wire termi ng set. (6+4)

(c) Write shorts notes on the following scanni techniques used in the Facsimile transmitter.

(i) Cylindrical scanning

(ii) Electronic CCD scanning (5+5)

3. Attempt *any two* parts of the following :

(a) In a VHF mobile radio system, the base station transmits 100 Watts at 150 MHz, and the antenna is 20 m above the ground. The transmitting antenna is a half-wave dipole for which the gain is 1.64. Calculate the field strength at a receiving antenna of height 2 m at a distance of 40 km. Also derive the necessary formulas used for your calculations. 10

(b) (i) Discuss briefly the factors that give r to fading in ionospheric radio transmissions. 5

(ii) Explain the difference between the surface wave and ground wave for radio transmissions in the frequency range from 300 kHz to 2 MHz. 5

(c) Explain what is meant by the geostationary orbit and why there is only one such orbit. Calculate the minimum delay time for a signal transmitted from a geostationary satellite to reach the earth. 10

4. Attempt *any two* parts of the following :

(a) Discuss briefly the propagation models for mobile radio channels. 10

(b) Describe briefly the signal design technique for fading multipath channels. 10

(c) Discuss briefly the principle of operation of the RAKE demodulator. 10

5. Attempt *any two* parts of the following :

(a) Discuss briefly different losses in an optical fiber. 10

(b) What do you mean by a coherent source ? Describe briefly the principle of operation of double-heterostructure LASER source. (2+8)

(c) Draw the block diagram of a digital optical communication link showing the basic constituents of the system. Also briefly describe the operations of different sub-blocks of the above diagram. (4+6)

** *** **