B. Tech.

(SEM. VIII) EXAMINATION, 2006-07

COMMUNICATION SYSTEM PRACTICE

Time : 3 Hours] [Total Marks : 100

Note : Attempt all questions. All questions carry equal marks.

1 Attempt any two of the following : 10×2
   (a) Explain the characteristics of parameters of AM receiver.
   (b) Draw the basic circuit diagram of a suppressed carrier balanced modulator using transistors. List the advantages of this modulator.
   (c) Describe the operation of multiplicative mixer using dual-gate MOSFET.

2 Attempt any two of the following : 10×2
   (a) Explain cabling arrangement for MDF in a Telephone Exchange using suitable diagram.
   (b) What is Voice Frequency Telegraphy? Draw a block diagram of 24 channel FM VFT system.
   (c) Describe the transmission and reception of Picture Tone in a combined land and radio carrier system used in Photo-Telegraphy.

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3 Attempt any two of the following:

(a) Explain the working of a radio terrestrial link.
(b) Describe with diagram how a two way communication is made between two earth stations via a satellite repeater.
(c) Explain the relation

$$ (C/No) \ dB_N = \left[ 10\log P_T G_T - 20\log \frac{4\pi R}{\lambda} + 10\log \frac{GR}{T} \right] $$

$$ = 10\log L_A - 10\log K $$

4 Attempt any two of the following:

(a) Draw the GSM system Architecture and explain how GPRS enhances data rate.
(b) What is ‘frequency – reuse’ in Mobile Cellular Communications? Establish relationship between re-use distance and frequency re-use parameter.
(c) How you digitally implement an LPC Analyser.

5 Attempt any two of the following:

(a) Differentiate between Homodyne and Hetrodyne techniques for detecting light signals.
(b) Design a Fiber Optical Communication System to connect two computers located in a building 1.5 km apart. The bit rate is 10 mbps, Use RZ code. BER < 10^-10, Rise time of LED as (10-20) ns, for LD as (1-2) ns; Pin Diode rise time 1 ns and ADD has 2 ns rise time. Use graded index fiber of 3 ns/km quality. Assume other standard data and thumb-rules of design.
(c) Explain with the help of block diagram the working of an optical communication system.
(d) Explain the various noise sources in an optical communication system.