4E2019

Roll No. : _____ Total Printed Pages : 3

4E2019

B. Tech. (Sem. IV) (Back) Examination, June/July - 2011
Computer
4CS6.1 Analog & Digital Communication (Common for CS & IT)

Time : 3 Hours] [Total Marks : 80
[Min. Passing Marks : 24

*Attempt any **five questions**, selecting **one question** from **each unit**. **All** questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*
Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. Nil 2. Nil

UNIT-I

1 (a) How to demodulate of AM waves by square law detector ? Explain it with suitable circuit diagram. 8

(b) The total power circuit of AM signal is 1000 W. Determine the power being transmitted at carrier frequency and at each of sideband when the modulation is 100%. 8

OR

1 (a) Explain the generator and demodulation of PAM signal. 8

(b) Determine the Nequest rate and Nequest interval for given signal :

$$x(t) = 6\cos 50\pi t + 20\sin 300\pi t - 10\cos 100\pi t$$

8

UNIT-II

2 (a) What is the signal to quantization noise ratio for linear quantization and explain it mathematically. 8

(b) Define the compading. Explain the μ-law and A-law compading.

8

OR

(a) Explain the delta modulation is detail with suitable diagram.

8

(b) A television signal having a bandwidth of 4.2 MHz is transmitted using binary PCM system, given that the number of quantization level is 512. Determine :

(i) Code word length

(ii) Final bit rate.

4+4

UNIT-III

3 (a) Derive the expression for spectrum of BISK and sketch the same.

8

(b) Explain the generator and detector of MSK signal.

8

OR

(a) Draw the block diagram of QPSK and explain it working.

12

(b) Explain the generator of ASK signal.

4

UNIT-IV

4 (a) Derive the general transmission line equation.

8

(b) Explain the working of public switch telephone network system.

8

OR

(a) Explain the salient features of optical fiber communication system in communication application.

8

(b) A step index multimode fiber with a numerical aperture 0.20 support approximate 1000 modes at a 850 nm wavelength, determine :

(i) What is diameter of its core

(ii) How many modes does the fiber supports at 1320 nm.

4+4

UNIT-V

5 (a) Explain the following terms :

(i) Channel capacity

(ii) Average information

(iii) Shanon's theorem.

2+2+4

(b) Explain the operation of syndrome calculator for cyclic codes with suitable block diagram.

8

OR

(a) Let C be a (7, 4) cyclic code with $g(x)=1+x+x^3$, find a generator matrix G for C. Find the code word for $d=(1010)$.

8

(b) Explain the linear block code.

8