4E 2920

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B.Tech. IV Semester (Main/Back) Examination 2012

Computer Science and Information Tech.

4CS6.1 Analog and digital Communication

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 24

Instructions to Candidates:

*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 may suitably be assumed and stated clearly. Units of quantities used/ calculated must be stated clearly.)*

Unit - I

1. What is mean by single side band suppressed carrier modulation. What are its advantages and disadvantages. With respect to 'AM'. **(8+4)**

2. A 400W carrier is modulated on a depth of 75%. Calculate the total power in modulated wave for full AM. **(4)**

OR

1. Draw the circuit diagram of balanced modulator using diode for generation of DSB-SC wave. Describing the working of this circuit using necessary mathematics. **(12)**

2. State and prove the sampling theorem. **(4)**

Unit - II

1. Draw the circuit diagram of FM demodulator circuit. Explain the working. **(8)**

2. An FM wave is given by $S(t) = 20\sin[6\times10^8 t + 7\sin 1250t]$ Determine

   a) Carrier and modulated frequency.

   b) Modulation Index

   c) Maximum deviation

   d) Power dissipated in 100Ω resistor. **(2+2+2+2=8)**

OR

1. Derive the expression for NBFM signal and give the block diagram for its output generation. **(8)**

2. Write a short note on frequency and phase modulation with their analogies. **(8)**

Unit - III

1. Explain differential pulse code modulation and compare it with PCM on the basis of bit transmission rate. **(16)**

OR

1. Draw the block diagram of Adaptive Delta Modulation. Explain its working and compare with PCM. **(8)**

2. A PCM system uses a uniform quantizer followed by a V bit encoder. Show that RMS signal to quantization noise ratio given as (1.8+6V)dB. **(8)**

Unit - IV

1. Write a short note on modulation and demodulation techniques of PPM. **(10)**

2. Explain various PAM formats like Unipolar RZ & NRZ, Polar RZ & NRZ signals for sequence 1100101011001011001. **(6)**

OR

1. Explain the cause of Inter Symbol Interference (ISI) and the methods to remove it. **(10)**

2. Describe the natural sampling of generation of PAM signal in detail. **(6)**

Unit - V

1. Explain the generation and reception of BPSK signal. **(8)**

2. Calculation the erorr probability for ASK modulation technique. **(8)**

OR

1. Describe minimum shift keying and explain with reason why it is named so. **(8)**

2. Compare ASK, PSK and FSK. **(8)**
