KUMARAGURU college of technology
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Register Number:……

B.E DEGREE EXAMINATIONS: JUNE 2015

(Regulation 2009)

Fifth Semester

COMPUTER SCIENCE AND ENGINEERING

ECE273**:** Analog and Digital Communication

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Following is not the purpose of modulation

   a) Multiplexing b) Effective radiation

   c) Narrow banding d) Increase in signal power

2. In commercial FM broadcast system, the modulating signal frequency is limited to about

   a) 4 kHz b) 15 KHz

   c) 5 KHz d) 20 KHz

3. Consider a speech signal band limited up to 4 KHz. It is sampled at the 8 KHz and quantized into 4096 levels. The data rate of the digital signal is.

   a) 8 kbps b) 96 kbps

   c) 4096 bps d) 32 kbps

4. Which of the following digital modulation scheme is bandwidth efficient

   a) BPSK b) BFSK

   c) QPSK d) Binary-DPSK

5. The quantization error in PCM system has……..

   a) Gaussian distribution b) uniform distribution

   c) Poisson's distribution d) normal distribution

6. The signaling rate of a DM system having sampling frequency of 16 kHz is given by……..

   a) 16 kbps b) 8 kbps

   c) 4 kbps d) 32 kbps

7. RS 232 is a

   a) Serial interface b) Analog interface

   c) Parallel interface d) Control interface

8. The expansion of ITU-T is

a) International Telecommunications Union – Telecommunication Standards Sector
b) International Television Union – Transmission Standards Sector
c) International Telecom United – Television Standards Sector
d) International Transmission Union – Telemetric Standards Sector

9. The number of runs in a PN sequence 0010111 is…….

a) 7
b) 4
c) 3
d) 2

10. In CDMA ……..spread spectrum is used

a) DS SS
b) FH SS
c) Time hopping SS
d) UWB

PART B (10 x 2 = 20 Marks)

11. An AM modulator has output
$S_{AM}(t) = 40\cos(2\pi \times 200t) + 6\cos(2\pi \times 180t) + 6\cos(2\pi \times 220t)$
Determine the modulation index and the efficiency.

12. A sinusoidal 400 Hz modulating signal of 2V amplitude modulates a carrier and produces 70 kHz frequency deviation. Determine the frequency sensitivity of the modulator.

13. Compare DPSK and BPSK signaling schemes.

14. Draw the signal space diagram of 16-QAM signal.

15. What do you mean by linear prediction?

16. Draw the Eye pattern and indicate the various measures

17. What are the parameters considered to select a modem?

18. Classify the data communication circuits.

19. What do you mean by spread spectrum communication?

20. Draw the timing diagram to illustrate fast hopping FH SS system.

PART C (5 x 14 = 70 Marks)

21. a) i) Draw single tone Amplitude Modulated signal, derive the total power, modulation index, efficiency and draw the spectrum . (10)

ii) Compare Amplitude Modulation with Frequency Modulation. (4)

(OR)

b) Derive the spectra of single tone angle modulated signal and discuss about bandwidth calculations.

22. a) i) Explain in detail about QPSK signaling scheme with neat diagrams. (10)

ii) Draw the QPSK signal for the data sequence 1 0 1 1 0 1 0 0. (4)

(OR)

b) i) With diagram explain the principle of operation of Costas loop. (7)

ii) Discuss in detail about BFSK transmitter and receiver. (7)

23. a) Explain in detail about Pulse Code Modulation technique with necessary diagrams.

(OR)

b) i) Discuss in detail about the Delta Modulation technique. (10)

ii) Write short note on Inter Symbol Interference. (4)

24. a) Explain in detail about data modems.

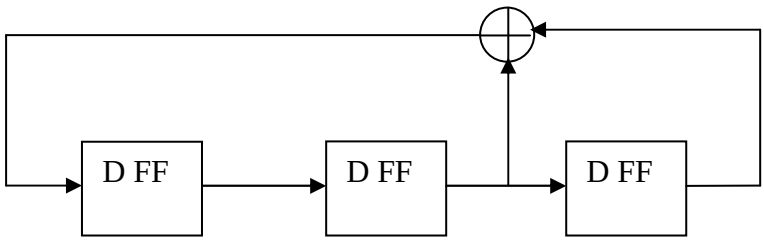
(OR)

b) Discuss in detail about serial and parallel interface standards in data communication system.

25. a) With relevant diagrams explain about Direct Sequence Spread spectrum system with binary PSK modulation.

(OR)

b) i) Determine the output of the Pseudo Noise Sequence generator given and verify the properties of m-sequence with the output of the circuit. (7)



ii) Discuss in detail about multiple access techniques and compare. (7)

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