Code No : V3124/R07

Set No: 1

III B.Tech I Semester Regular & Supplementary Examinations, November 2011

DIGITAL COMMUNICATION SYSTEMS

(Common to Computer Science and Engineering& Information Technology)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions

All Questions carry equal marks

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1. a) Explain about transmission of digital data with neat diagram and indicate the signals level at each and every stage.
   b) What is an open system? Explain in detail about open systems interconnection.

2. a) Explain in detail about the balanced transmission system in metallic transmission.
   b) What are the primary building blocks of the fiber optic cable? Explain.

3. a) What do you understand by companding? Compare analog companding and digital companding.
   b) What is multiplexing? Explain briefly about the Time-Division Multiplexing.

4. a) Describe Rays and wave fronts and the relation between them.
   b) What are the three modes of terrestrial propagation of electromagnetic waves? Explain.

5. a) Draw the block diagram of a telephone set and explain its components.
   b) Explain the units of powers measurement.

6. Write about the first-generation and second-generation cellular telephone systems.

   a) What is the difference between error detection and error correction?
   b) Give a brief description of longitudinal redundancy checking.
   c) How does exact -count encoding detect errors.

7. Explain about Control field on SDLC protocol?

8. Define and describe the following data link protocol functions:
   i. Line discipline.
   ii. Flow control.
   iii. Error control.

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Code No: V3124/R07 **Set No: 2**

III B.Tech I Semester Regular & Supplementary Examinations, November 2011

DIGITAL COMMUNICATION SYSTEMS

(Common to Computer Science and Engineering& Information Technology)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions

All Questions carry equal marks

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1. a) Describe the primary standard organizations for data communication.
   b) Explain the following:
      i. Bit rate
      ii. Baud
      iii. M-ary encoding

2. a)What is a metallic transmission line? Explain the five types of metallic transmission line losses.
   b) Define the following terms:
      i) Transmission line ii) Wave velocity
      iii) Frequency iv) Wave length

3. a) A PCM-TDM system multiplexes 24 voice-band channels. Each sample is encoded into7- bits, and a framing bit is added to each frame. The sampling rate is 9000 samples per second. Determine the line speed in bps.
   b) Draw the block diagram of a two-channel PCM-TDM system and explain.

4. a) Discuss about microwave communications systems.
   b) What are the requirements for satellites in geosynchronous orbits? What are the advantages and disadvantages of geosynchronous satellites?

5. a)What is paging system? Explain briefly.
   b) Differentiate communications and telecommunications and explain.

6. Describe the concepts of personnel communication systems.

7. Explain the following error detection techniques with suitable example.
   a. Redundancy
   b. Single bit-parity
   c. Cycle redundancy check
   d. Checksum

8. a) Define data link protocols.
   b) State the differences between asynchronous and synchronous protocols.
   c) Differentiate between characters and bit oriented protocols.

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Code No: V3124/R07

Set No: 3

III B.Tech I Semester Regular & Supplementary Examinations, November 2011

DIGITAL COMMUNICATION SYSTEMS

(Common to Computer Science and Engineering& Information Technology)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions

All Questions carry equal marks

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1. a) What is Data Communication? What are their possible ways of Data transmission and explain with examples.
   b)Define modulation. Describe various analog modulation techniques in detail.

2. a) Explain the difference between traverse and longitudinal waves.
   b) Give note on the propagation of light through an optical fiber cable.

3. a) Describe pulse width modulation, pulse position modulation and pulse amplitude modulation.
   b) Discuss about the frequency division multiplexing.

4. a)What is electromagnetic polarization? Explain briefly.
   b) What is a satellite multiple accessing arrangement? List and describe in detail with neat diagrams, the three forms of satellite multiple accessing arrangements.

5. a) Explain the function of two-wire to four-wire hybrid set.
   b) What is the basic purpose of call progress tones and signals? Explain them in detail.

6. a)What are the three primary subsystems of GSM? Describe in detail the GSM system architecture.
   b) List the basic parameters of GSM and describe briefly the GSM radio subsystem.

7. Explain about the methods involved in error detection.

8. a)Describe and differentiate character- and bit-oriented protocols.
   b) Explain asynchronous-data- link protocols.

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Code No: V3124/R07

Set No: 4

III B.Tech I Semester Regular & Supplementary Examinations, November 2011

DIGITAL COMMUNICATION SYSTEMS

(Common to Computer Science and Engineering& Information Technology)

Time: 3 Hours **Max Marks: 80**

Answer any FIVE Questions

All Questions carry equal marks

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1. a) Draw a block diagram of Data communication system and explain its components.
   b) Explain serial and parallel Data Transmission. When do we use serial and parallel transmission?

2. a)Explain optical fiber communication with a block diagram.
   b) Describe the following terms: optical power, velocity of propagation, refraction, refractive index, critical angle, acceptance angle, acceptance cone and numerical aperture.

3. a) Determine the dynamic range for a 10 bit sign magnitude PCM code.
   b) Describe delta modulation with example.

4. a) What is meant by a free space path loss of an electromagnetic wave? Give the mathematical equation in decibel form. Determine the free space path loss for a frequency of 6 GHz traveling a distance of 50Km in dB.
   b) Define free-space propagation. Why TEM waves do not propagate well through lossy conductors?

5. Explain the Basic Telephone call procedure.

6. a) Explain the operation of N-AMPS cellular telephone systems.
   b) Describe the differences between the radiated power classifications for USDC and AMPS.

7. a) Write about the voice-band modem.
   b) Define the terms character framing and message framing.

8. a)What are the purposes of the nr and ns sequences on SDLC? What is delimiting sequence?
   b) Describe how BSC achieves transparency?

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