

Code: 9A12302

II B. Tech II Semester (R09) Regular & Supplementary Examinations, April/May 2012

DATA COMMUNICATION SYSTEMS

(Computer Science & Systems Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

- 1 What are the various types of network topology? What are the implications of having different topology?
- 2 (a) State Snell's law for refraction and outline its significance in fiber-optic cables.
(b) List out and describe the losses associated with optical fibers.
- 3 (a) Define and describe pulse code modulation.
(b) What is Nyquist sampling rate?
- 4 (a) Discuss optical properties of radio waves.
(b) Explain satellite orbits and orbital patterns
- 5 (a) Describe the transmission characteristics of a local subscriber loop and also explain about loading coils and bridge taps.
(b) Briefly describe about interface parameter.
- 6 (a) Explain the changed scenarios of cellular telephone.
(b) Describe AMPS control channels.
- 7 (a) What are data communication standards and why they are needed?
(b) With an example, explain error correction using Hamming codes.
- 8 Explain the AT command set.

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- 1 Describe the differences between:
(i) Analog and digital communication systems.
(ii) Digital modulation and digital transmission.
- 2 Explain the characteristics and compare various types of metallic transmission lines.
- 3 Draw and explain the PCM signal system.
- 4 Explain briefly the terrestrial propagation of electromagnetic waves.
- 5 (a) Where in a telephone system is the local loop?
(b) Define and explain the basic format of caller ID.
- 6 (a) Describe the concepts of personal communication system.
(b) Describe and outline the frequency allocation for the advanced mobile telephone system (AMPS).
- 7 (a) Distinguish Asynchronous and Synchronous serial data.
(b) Explain the terms retransmission and forward error correction.
- 8 Explain ITU-T voice-band modem specifications.

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- 1 Explain data communication protocols with neat sketch.
- 2
 - (a) Describe the characteristics of parallel conductor transmission lines.
 - (b) List out and describe the losses associated with optical fibers.
- 3
 - (a) Write notes on quantization and the folded binary code.
 - (b) Explain linear versus nonlinear PCM codes.
- 4 Explain the optical properties of radio waves.
- 5 Explain in detail about the basic telephone call procedures.
- 6 Name and describe the two most prevalent types of interference in cellular telephone systems.
- 7
 - (a) Write the differences between error detection and error correction.
 - (b) Compare and contrast asynchronous and synchronous serial data formats.
- 8 Describe data communication modems and tell where they are used in data communication circuits.

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- 1 Name various network models and explain each one with examples.
- 2
 - (a) Outline the primary building blocks of a fiber optic system.
 - (b) List the disadvantages of optical fiber cables.
- 3 Explain digital line encoding.
- 4
 - (a) State and explain inverse square law.
 - (b) Describe diffraction and explain Huygens's principle.
- 5
 - (a) Describe the basic operation of a cordless telephone and explain how it differs from standard telephone.
 - (b) Briefly describe what happens when a telephone set is taken off hook.
- 6
 - (a) Explain the functions of digital cellular telephone system.
 - (b) Explain about EIA/TIA interim standard IS-54.
- 7
 - (a) Write the differences between character and message parity.
 - (b) Write short notes on types of ARQ.
- 8 List and describe the four types of commands used with the Hayes AT command set.
