Code: 9A04807

R09

B.Tech IV Year II Semester (R09) Advanced Supplementary Examinations, July 2013
DATA COMMUNICATIONS
(Common to ECE and EConE)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) Explain the layered architecture.
  (b) Explain information capacity.
  (c) If a binary signal is sent over a 3 KHz channel whose signal-to-noise ratio is 20 dB. What is the maximum achievable data rate?

2 (a) Explain the types of transmission lines.
  (b) Determine the characteristic impedance for an air dielectric two-wire parallel transmission line with a D/r ratio = 12.22.
  (c) Explain the optical fiber communication system with neat block diagram.

3 (a) Explain pulse code modulation and derive the expression for signal voltage-to-quantization noise voltage ratio.
  (b) Explain T1 digital carrier system.

4 (a) Explain electromagnetic radiation.
  (b) What is terrestrial propagation of electromagnetic waves? Describe ground wave and space wave propagation.
  (c) For an isotropic antenna radiating 100 W of power, determine:
     (i) Power density 1000 m from the source.
     (ii) Power density 2000 m from the source.

5 (a) Describe basic telephone call procedures.
  (b) What are the transmission parameters? Explain any one category.
  (c) Draw the voice-frequency circuit arrangement.

6 (a) Explain the USDC digital voice channel.
  (b) Explain global system for mobile communications.
  (c) Determine the transmit and receive carrier frequencies for channel 3.

7 (a) Write about compatible voice-band modems.
  (b) Write the comparisons between asynchronous and synchronous voice-band modems.
  (c) Explain the asymmetry of 56K modems.

8 (a) Explain the data transmission modes.
  (b) Describe the high-level-data link control.
  (c) Insert 0s from the following SDLC data stream.
     111 001 000 011 111 111 100 111 110 100 111 101 011 111 111 111 001 011
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