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Code No: A0603, A5510, A5709, A6505

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M.Tech I Semester Examinations, March/April-2011

DIGITAL DATA COMMUNICATIONS

(COMMON TO DIGITAL SYSTEMS AND COMPUTER ELECTRONICS, EMBEDDED SYSTEMS, VLSI SYSTEM DESIGN, WIRELESS AND MOBILE COMMUNICATION)

Time: 3hours **Max. Marks: 60**

Answer any five questions

All questions carry equal marks

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1. a) With the aid of block diagrams, explain the working principle of 16-QAM system.
   b) Derive the expression f or the Probability of error for QPSK modulation scheme. [12]

2. a) Discuss about various types of error detection methods available in data communication.
   b) For a 12-bit data string of 101100010010, determine the number of Hamming bits required arbitrarily place the Hamming bits into the data string. Also determine the logic condition of each Hamming bit. Assume an arbitrary single bit transmission error, and prove that the Hamming code will successfully detect the error. [12]

3. a) Describe RS-232 interface standard in detail and how it is different from other serial interfacing standards.
   b) Explain various types of asynchronous voice-band modems in brief. [12]

4. a) With suitable frame format, discuss about SDLC synchronous protocol. Also explain what is meant by 'transparency'?
   b) Determine the bit pattern for the control field of a supervisory frame sent from a secondary station to the primary for the following conditions: (i) Secondary is ready to receive (ii) it is a final frame (iii) Secondary is confirming correct reception of frames 3, 4, and 5. [12]

5. a) With the help of block diagram, describe the IEEE 802.3 MAC frame format.
   b) List out some important characteristics of 100 Mbps Ethernets. [12]

6. a) Give the comparison between synchronous and statistical TDMs.
   b) For the European E1 32 channel system with number of bits per frame is 256 and number of bits in the synchronizing word is 8, and a 2.048 Mbps transmission rate, determine the average number of bits needed to synchronize and the average synchronization time.
   c) What is the importance of WDM? Explain. [12]

7. a) Briefly explain the architecture layers of IEEE 802.11 standard.
   b) How Bluetooth technology is standardized for civilian applications? Explain its features. [12]

8. Write the following:
   a) VOIP b) Audio compression techniques. [12]

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