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M.E. 1st Sem. Electronics & Communication Engg. Examination – December, 2013

DATA COMMUNICATION NETWORK

Paper : MEEC-515

Time : Three hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : All questions carry equal marks. Attempt any *five* questions.

1. (a) What does the Shannon capacity have to do with communication ? Calculate the maximum bit rate for the noiseless channel with a bandwidth 3000Hz transmitting a signal with two signal levels. 10

(b) What is the difference between transmission distortion and impairment ? Explain different types of transmission impairments. What are the techniques to compensate them ? 10

2. (a) Compare the Go-back-N-ARQ and selective repeats flow control protocols. 10

(b) Write a short note on RS 232 physical interface. 10

3. (a) What is the difference between character and bit oriented protocols. Which one is efficient and why ? 10

(b) What are the various types of error detection techniques ? Explain parity check with the help of examples. Write the limitations of this method. 10

4. (a) Which one is better and why in terms of cost, efficiency, Signal processing, security and number of users ? FDM or TOM. 10

(b) Difference between synchronous and statistical TDM. Which one is better in terms of supporting number of users at the same transmission rate ? 10

5. (a) Find the expression for throughput of Slotted ALOHA. Also determine condition for maximum throughput of slotted ALOHA. What will be its maximum throughput ? 10

(b) What is meant by topology ? Differentiate between various topologies of LAN. 10

6. Write a short note on application layer and its functioning. What are the purpose of Application specific service elements like File Transfer, Access and Management (FTAM), Virtual Terminal Service (VTS) and Directory service ? 20

7. Briefly describe the architecture and objectives of ISDN. 20

8. (a) Compare the TCP/IP protocol with OSI protocol. Critically examine why TCP/IP protocol is much widely accepted and why. 10

(b) Explain interleaving, synchronization and bit padding in context with TDM 10
