Candidate Seat No.....

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Fourth Semester of B. Tech. (CE) Examination

Dec 2015

CE202.01/CE202: DATA COMMUNICATION & NETWORKING

Date: 11/12/2015, Friday **Time: 01:30 p.m. to 04:30 p.m.** **Maximum Marks: 70**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make & specify suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

SECTION – I

Q - 1 Do as Directed. [05]

(a) What is Link in Computer Network?

(b) What is burst error?

(c) What is Redundancy in detecting or correcting errors?

(d) _____refers to a set of procedures used to restrict the amount of data that the sender can send before waiting for acknowledgment.

(e) What is the need for framing?

Q - 2 Do as Directed (Any Three). [15]

(a) What is Network? What is Distributed Processing? Explain most important three criteria of any network.

(b) Explain advantages and disadvantages of Star and Bus topology.

(c) Explain Byte-stuffing and Bit-stuffing.

(d) Data is 1001101. What will be the code generated using redundancy bit calculation in Hamming Code? Show it using each and every step.

(e) Explain Circuit-Switched Connection versus Packet-Switched Connection.

Q - 3 Do as Directed (Any Three). [15]

(a) Explain Mesh Topology and Ring Topology.

(b) What are the responsibilities of Application Layer and Data Link Layer in OSI Model? Explain in detail.

(c) Define Protocol and Standard. Explain key features of Protocol in detail.

(d) Write down tasks of sender and receiver in error detection method used by higher-layer protocols.

(e) What do you mean by Virtual Circuit? What do you mean by SVC and PVC? Explain them in detail.

SECTION – II

Q - 4 Do as Directed. [05]

(a) A digitized voice channel is made by digitizing a 6-kHz bandwidth analog voice signal. We need to sample the signal at twice the highest frequency (two samples per hertz). We assume

that each sample requires 8 bits. What is the required bit rate in bps?

(b) A signal travels through an amplifier, and its power is increased 10 times. Find out amplification (gain of power).

(c) The sharing of a medium and its path by two or more devices is called_____.

(d) What does Nyquist theorem specify?

(e) Capacity of extremely noisy channel is_____regardless of the bandwidth. [15]

Q - 5 Do as Directed (Any Three).

(a) Write down pros and cons of Optical Fiber.

(b) What are the 802.3 MAC frame fields? Draw 802.3 MAC frame and explain each field.

(c) What is the result of scrambling the sequence 1100000000110000010 using one of the following scrambling techniques? Assume that the last non-zero signal level has been positive.

a. B8ZS

b. HDB3 (The number of nonzero pulse is odd after the last substitution).

(d) Explain Pulse Code Modulation (PCM).

(e) What is Frequency Division Multiplexing (FDM)? Explain it in detail. [15]

Q - 6 Do as Directed (Any Three).

(a) Explain different *Propagation Modes* for Wireless Communication.

(b) What is Synchronous Time-Division Multiplexing? Explain it in detail.

(c) Compare Switch and Router.

(d) Explain following terms in short:

10Base5, 10Base2, 10Base-T, 10Base-F, 100Base-T4

(e) Explain amplitude and frequency characteristics of Sine wave.

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