Candidate Seat No.....

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Fourth Semester of B. Tech. (CE) Examination

May-June 2017

CE202.01/CE202: DATA COMMUNICATION & NETWORKING

Date: 02/06/2017, Friday **Time: 10:00 am To 01:00 pm** **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]

Match the following:

(a) Bus Topology	(1) Combination of two or more topologies
(b) Star Topology	(2) Data moves in circular direction
(c) Ring Topology	(3) Backbone cable
(d) Mesh Topology	(4) Hub or Switch
(e) Hybrid Topology	(5) Each node is connected to every other node by direct links

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

(a) Define Data Communication. For n devices in a network, what is the number of cable links required for a mesh, ring, bus, and star topology?

(b) Which are the characteristics to measure effectiveness of data communication system? What is real time transmission?

(c) Explain Flow Control and Error Control at data link layer.

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

(e) Calculate CRC and find out reminder by considering these data: frame 1101011011 and generator 10011.

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

(a) Give layer name for the following with respect to OSI model:

(a) Format and code conversion services

(b) Establishes, manages, and terminates sessions

(c) Ensures reliable transmission of data

(d) Log-in and log-out procedures

(e) Provides independence from differences in data representation

(b) Define Link. Write down about two possible types of connections: point-to-point and multipoint.

(c) What are the responsibilities of Session Layer and Presentation Layer in OSI Model? Explain in detail.

(d) Define Single Bit error and Burst error. What kind of error is undetectable by the checksum?

(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) Determine whether following transmission is baseband or broadband: [02]

(a) We send a voice signal from a microphone to a recorder.

(b) We send a digital signal from one station on a LAN to another station.

(b) A device is sending out data at the rate of 1000 bps. [03]

(a) How long does it take to send out 10 bits?

(b) How long does it take to send out a single character (8 bits)?

(c) How long does it take to send a file of 100,000 characters?

Q - 5 Do as Directed (Any Three). [15]

(a) Write down advantages and disadvantages of Optical Fiber.

(b) Draw and Explain 802.3 frame format.

(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 (odd no of 0s since last substitution).

(d) Distinguish between a signal element and a data element. List three different techniques in serial transmission and explain the differences.

(e) Explain Serial Transmission and Parallel Transmission in detail.

Q - 6 Do as Directed (Any Three). [15]

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

(b) What is Statistical Time-Division Multiplexing? Explain it in detail with example.

(c) Compare Switch and Hub.

(d) Compare Ethernet, Fast Ethernet, Gigabit Ethernet, FDDI and Token Ring.

(e) How do guided media differ from unguided media? A beam oflight moves from one medium to another medium with less density. The critical angle is 60°. Do we have refraction or reflection for each of the following incident angles?

(a) 40°

(b) 60°

(c) 80^0

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