CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Sixth Semester of B. Tech. (CE/IT) Examination

May 2014

CE305.01 Computer Network and Internetworking Layers

Date: 06.05.2014, Tuesday **Time: 10:00 a.m. To 01:00 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 suitable assumptions and draw neat figures wherever required.
4. Figures to the right indicate full marks.

SECTION – I

Q - 1 (a) Answer the following questions. **[06]**

1. List out the key design issues for layers and explain any three in detail. [04]
2. **Differentiate:** Connection Oriented and Connection Less services. [02]

(b) List out various framing methods at datalink layer. Explain any two methods with example. **[05]**

Q - 2 (a) Explain ATM reference model with diagram. **[05]**

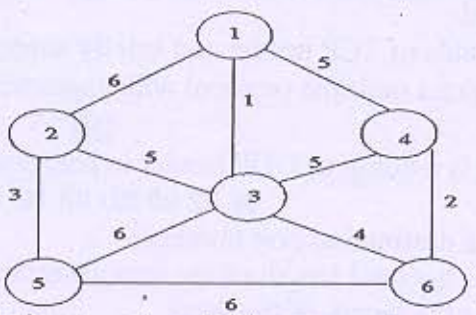
(b) Do as directed. **[07]**

1. Describe Optimality Principle and give example. [02]
2. What is the CRC obtained by dividing 10100001 by the generator polynomial x^3+1? [02]
3. Explain Store-and-Forward Packet switching with figure. [03]

OR

Q - 2 (a) Explain HDLC frame format in detail. **[05]**

(b) Draw the routing tables for **any four** nodes for following network using distance vector routing algorithm. **[04]**



(c) Differentiate: Virtual circuit network and datagram network. **[03]**

Q - 3 Answer the following Questions. **[12]**

(a) Find whether the following two devices are in a same subnet or not. **[03]**
Device A: 172.16.17.30/20 **Device B:** 172.16.28.15/20

(b) Draw and explain IP version4 header format. **[05]**

OR

(b) Explain classful IPv4 addressing scheme. And also list out limitations of classful IPv4 addressing compare to classless IPv4 addressing scheme. **[05]**

(c) What is the difference between error detection and error correction techniques at datalink layer? Explain single bit sliding window protocol. **[04]**

OR

(c) Explain Leaky Bucket algorithm for congestion control. **[04]**

SECTION – II

Q - 4 (a) **Attempt following.** [04]

1. Sender A and Receiver B are connected through two intermediate routers. Determine how many times each packet has to visit the data link layer during a transmission from A to B.

   (a) 4 times **(b)** 2 times **(c)** 6 times **(d)** 8 times

2. What is the maximum size of data that the application layer can pass on to the TCP layer below?

   (a) any size **(b)** 2^{16} bytes - size of TCP header **(c)** 2^{16} bytes **(d)** 1500 bytes

3. The characteristics of optical fibre CSMA/CD LAN are

   (a) Good immunity to the electromagnetic interference **(b)** Low loss of power

   (c) High bandwidth **(d)** All of these

4. The ____ translates internet domain and host names to IP address.

   (a) domain name system (b) routing information protocol

   (c) network time protocol (d) internet relay chat

(b) Do as Directed. [07]

1. Explain the addressing performed at transport layer in detail. [04]
2. Explain upward multiplexing in detail. [03]

Q - 5 (a) Explain the hidden terminal problem and exposed terminal problem of Wireless LAN for multiple access. Also explain the solution of these problems. [05]

(b) Do as Directed. [07]

1. List out flag fields of TCP header and briefly explain any three. [04]
2. Explain pure aloha multiple protocol with appropriate diagram. [03]

OR

Q - 5 (a) The following is a dump of UDP header in hexadecimal format. [05]

06 32 00 0D 00 1C E2 17

(i) What is destination port number?
(ii) What is the total length of the user datagram?
(iii) What is the length of the data?

(b) Answer the following questions. [07]

1. Explain three-way handshake for establishing a connection at transport layer. [04]
2. **Differentiate:** Nonpersistent CSMA protocol and p-persistent CSMA protocol. [03]

Q - 6 (a) Draw the state diagram for connection establishment and release. Also explain the primitives in brief. [06]

(b) Explain DNS (Domain Name System) Server in detail. [06]

OR

Q - 6 (a) Explain HTTP (Hyper Text Transfer Protocol) in detail. [06]

(b) Explain architecture and services of Electronic mail. [06]

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