15261

B. Tech 7th Semester Examination

Computer Networks and Data Communication (OS)

EC(ID)-7003

Time : 3 Hours   Max. Marks : 100

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all selecting one from each of the Sections A, B, C & D. Section E is compulsory.

SECTION - A

1. (a) Explain the function of each layer in TCP/IP model. (10)

    (b) Explain how available bandwidth and the signal to noise ratio for a particular transmission medium affect the maximum transmission speed.   (10)

2. (a) Explain LAN. An alternative to a LAN is simply a big timesharing system with terminals for all users. Give advantages of a client-server system using a LAN over the timesharing system.   (10)

    (b) Compute the effective data rate of a communication channel with signal to noise ratio of 30dB and bandwidth 5000 Hz.   (10)

SECTION - B

3. (a) Explain the concepts of framing and error control at data link layer.   (10)

    (b) ARP and RARP both map addresses from one space to another. In this respect, they are similar. However, their implementation is fundamentally different. In what major way do they differ?   (10)

4. (a) Explain Selective Repeat protocol in detail.   (10)

    (b) Describe the working of 1-bit sliding window protocol.   (10)

SECTION - C

5. (a) Why does Slotted ALOHA perform better than Pure ALOHA? Explain using a diagram. How much is the difference?   (10)

    (b) How collision can occur at data link layer? Explain the working of basic bit-map protocol for handling collision.   (10)

6. (a) Sixteen stations are contending for the use of a shared channel using the adaptive tree walk protocol. If all the stations whose addresses are prime numbers suddenly become ready at once, how many bit slots are needed to resolve the contention?   (10)

    (b) Explain 802.5 protocol in detail.   (10)

SECTION - D

7. (a) Explain the functions of transport layer. What is the main difference between TCP and UDP?   (10)

    (b) What is internetworking? Routers, switches and hubs are used to differing networks. Under what circumstances would each of these technologies be used?   (10)

8. (a) In a block of addresses, the IP address of one host is 25.34.12.52/16. What are the first address and the last address in this block?   (10)

(b) How connection is established and terminated in TCP using three way handshaking mechanism? Describe in detail.   (10)

SECTION - E

9. (a) Place each of these protocols in the correct OSI layer: IP, ICMP, SMTP, UDP.

(b) Define connection oriented communication.

(c) What is a socket?

(d) What is the principle reason to use a private IP address on an internal network?

(e) Differentiate between frame and packet.

(f) What is UTP?

(g) Describe MAN.

(h) Explain file transfer protocol.

(i) Why port addressing is done?

(j) Define data encryption.   (2×10=20)