T 8126

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

Fifth Semester

Computer Science and Engineering

CS 1302 — COMPUTER NETWORKS

(Common to Information Technology and B.E. (Part - Time) R 2005 Fourth Semester)

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the major functions performed by the presentation layer of the ISO OSI model.

2. A sine wave has a frequency of 6 Hz. What is its period?

3. Briefly discuss stop-and-wait method of flow control.

4. List the two types of data frames in FDDI.

5. List the two forms in which virtual circuit packet switching is implemented.

6. Which class does the following IP address belong to?

   (a) 157.143.252.207

   (b) 93.31.1.245

7. What is a datagram socket?

8. "TCP software is implemented as a Finite State Machine". Discuss.

9. What is a Domain Name Service?

10. State the application layer protocol in the TCP/IP protocol suite that provides access to a networked file server.

PART B — (5 × 16 = 80 marks)

11. (a) (i) What is a Protocol? List the three key elements of a protocol. (4)

(ii) With relevant examples differentiate between simplex, half duplex and full duplex communication. (4)

(iii) A Sine wave completes one cycle in 25 μs. What is its frequency? Express the frequency in KHz. (4)

(iv) A digital signal has a bit interval of 40 microseconds. What is the bit rate? Express the bit rate in Kbps. (4)

Or

(b) (i) An analog signal carries four bits in each signal element. If 1000 signal elements are sent per second, find the baud rate and the bit rate. (4)

(ii) Discuss the role played by repeaters in Terrestrial Microwave communication? Is the distance between repeaters fixed? Discuss. (4)

(iii) A network has n devices. Determine the number of cable links required for a mesh, ring, bus and star topology. (8)

12. (a) (i) A block of 32 bits has to be transmitted. Discuss how the thirty two bit block is transmitted to the receiver using Longitudinal Redundancy Check. (6)

(ii) Consider a 32 bit block of data 11100111 11011101 00111001 10101001 that has to be transmitted. If Longitudinal Redundancy Check is used what is the transmitted bit stream? (4)

(iii) In the Hamming code, for a data unit of m bits how do you compute the number of redundant bits 'r' needed? (3)

(iv) What kinds of errors can Vertical Redundancy check determine? What kinds of errors it cannot determine? (3)

Or

(b) (i) List the three main functions performed by the data link layer of the ISO OSI model. (3)

(ii) Explain the working of Carrier Sense Multiple Access protocol. (3)

(iii) How does a Token Ring LAN operate? Discuss. (6)

(iv) List and briefly discuss the two different basic transmission technologies that can be used to set up wireless LAN's. (4)

13. (a) (i) State which layers of the ISO OSI model does the following interconnecting devices operate. (4)

(1) Repeaters

(2) Bridges

(3) Routers

(4) Gateways.

(ii) State the major difference between Distance Vector Routing and Link State Routing. Discuss how these routing techniques work. (12)

Or

(b) (i) What is subnetting? Discuss. Also state which classes of IP address can be subnetted. (5)

(ii) What is subnet masking? Discuss. (3)

(iii) How can we prove that we have 2,147,483,648 addresses in class A? (3)

(iv) What is the subnetwork address if the destination address is 200.45.34.56 and the subnet mask is 255.255.240.0? (5)

14. (a) (i) List and discuss the various primitives for a simple transport service. (6)

(ii) "DNS can use the services of UDP or TCP using port 53". Discuss when UDP is used and when TCP is used. (4)

(iii) Highlight the features of UDP and briefly discuss the same. (6)

Or

(b) (i) Discuss connection establishment and connection release in TCP. (6)

(ii) Discuss how TCP provides reliability using error control. (6)

(iii) Discuss the strategies TCP uses to avoid congestion. (4)

15. (a) (i) With a relevant example discuss how the domain space is divided. (6)

(ii) Distinguish between a fully qualified domain name and a partially qualified domain name. Give relevant example. (6)

(iii) List the various risks faced by messages that are transmitted over the internet. (4)

Or

(b) (i) Discuss how simple Mail Transfer Protocol (SMTP)works? Can multimedia messages be transmitted using SMTP? Discuss. (10)

(ii) Is Common Gateway Interface a language? Discuss. (6)
