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Question Paper Code : 71462

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2015.

Sixth Semester

Electronics and Communication Engineering

EC-2352/EC 62/10144 EC 603/10144 BME 41 — COMPUTER NETWORKS

(Common to Seventh Semester Biomedical Engineering)

(Regulation 2008/2010)

(Also Common to PTEC 2352 – Computer Networks for B.E. (Part-Time) Fifth Semester – Electronics and Communication Engineering – Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Distinguish between packet switching and circuit switching?
2. List out the limitation of unguided transmission medium.
3. Mention the functions of Data link layer.
4. Calculate the load on the system with capacity 50 Kbps and link utilization 0.5.
5. In an IPV4 packet, the value of HLEN is 5, and the value of the total length field is 0 × 0028. How many bytes of data are being carried by this packet?
6. List out the 5 types of error messages that can be generated by ICMP.
7. Suppose a TCP connection is transferring a file of 5000 bytes. The first byte is numbered 10,001. What are the sequence numbers for each segment if data are sent in five segments, each carrying 1000 bytes?
8. What is SYN flooding attack?
9. What are the main categories of DNS messages?
10. Why do we need POP3 or IMAP4 for electronic mail?

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the architecture of OSI reference model.

Or

- (b) Discuss the architecture of TCP/IP reference model.

12. (a) Discuss the architecture of WLAN. (16)

Or

- (b) (i) A network using CDMA/CD has a bandwidth of 10 Mbps. If the maximum propagation time including the delays in the devices and ignoring the time needed to send a jamming signal is $25.6 \mu\text{sec}$. What is the minimum size of the frame? (10)

- (ii) Highlight the salient feature of virtual circuit networks. (6)

13. (a) Write short notes on ICMP, ARP, RARP and IGMP.

Or

- (b) (i) If a router has 15 entries in its group table, should it send 15 different queries periodically or just one? Explain your answer. (6)

- (ii) An organization is granted the block 130.56.0.0/16. The administrator wants to create 1024 subnets. Find the subnet mask, number of addresses in each subnet, first and last addresses in subnet 1 and first and last addresses in subnet 1024. (10)

14. (a) (i) A client uses TCP to send data to a server. The data are 16 bytes. Calculate the efficiency of this transmission at the TCP level and IP level. Assume no options for the IP header. Calculate the efficiency of transmission at the data link layer. Assume no options for the IP header and use Ethernet at the data link layer. (10)

- (ii) Explain the flow control algorithm to regulate the traffic in the data network. (6)

Or

- (b) Describe the powerful congestion control algorithm used in data communication network to minimize loss of data.

15. (a) World Wide Web is the repository of information linked together from points all over the world. Discuss the architecture, web documents and HTTP used to realize the function of Internet.

Or

- (b) (i) Jennifer creates a pair of keys for herself. She chooses $p = 397$ and $q = 401$. She calculates $n = 159,197$ and $\Phi = 396,400 = 158,400$. She then chooses $e = 343$ and $d = 12,007$. Show how Ted can send a message to Jennifer if he knows e and n . (10)
- (ii) A message is made of 10 numbers between 00 and 99. A hash algorithm creates a digest out of this message by adding all numbers modulo 100. The resulting digest is a number between 00 and 99. Does this algorithm meet the first criterion of a hash algorithm? Does it meet the second criterion? Does it meet the third criterion? (6)