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08SCN12

# First Semester M.Tech. Degree Examination, June-July 2009
## Computer Networks

Time: 3 hrs. Max. Marks:100

**Note :** ***Answer any FIVE full questions.***

1 a. Briefly explain about layered architecture of Internet. **(07 Marks)**
b. How do you measure the performance of the network? Explain in detail. **(07 Marks)**
c. Consider a point to point link of 50 km in length. At what bandwidth would propagation delay (at a speed of $2\times10^8$m/sec) equal transmit delay for 100 byte packets? What about 512 byte packets? **(06 Marks)**

2 a. Explain CRC method of error detection and correction. **(07 Marks)**
b. Find the code – word for a message $x^7 + x^4 + x^3 + x$ using a CRC polynomial of $x^3 + x^2 + 1$. **(06 Marks)**
c. How FDDI differs from token ring? Explain the operation of FDDI. **(07 Marks)**

3 a. Explain with example the following approaches to switching :
i) Datagram ii) Virtual circuit iii) Source routing. **(12 Marks)**
b. Write a note on ATM cell switching. **(08 Marks)**

4 a. Explain the format of IPV4 packet header. **(07 Marks)**
b. Write a note on fragmentation and reassembly of IP packets. **(07 Marks)**
c. What are the propagation time and transmission time for a 2.5 kbyte e – mail message if the bandwidth of the network is 1gbps? Assume that the distance between the sender and the receiver is 12,000km and that light travels at $2.4\times10^8$ m/s. **(06 Marks)**

5 a. Explain the operation of routing for mobile hosts. **(06 Marks)**
b. What is subnetting? Explain with an example. **(07 Marks)**
c. Suppose a router has built up the routing table shown in Table Q5(c). The router can deliver packets directly over interfaces 0 and 1 or it can forward packets to routers R2, R3 or R4. Assume the routers does longest prefix match. Describe what the router does with a packet addressed to each of the following destinations.
i) 128.96.171.92 ii) 128.96.163.151 iii) 128.96.169.192 iv) 128.96.165.121. **(07 Marks)**

Table Q5(c)

| Subnet Number | Subnet Mask | Next Hop |
|---|---|---|
| 128.96.170.0 | 255.255.254.0 | Interface 0 |
| 128.96.168.0 | 255.255.254.0 | Interface 1 |
| 128.96.166.0 | 255.255.254.0 | R2 |
| 128.96.164.0 | 255.255.252.0 | R3 |
| (default) | | R4 |

6 a. Write a note on TCP header format. **(06 Marks)**
b. Explain with neat diagram the Three – way handshake algorithm of TCP connection establishment and termination. **(07 Marks)**
c. Explain the adaptive retransmission mechanism with original algorithm for computing a timeout value between a pair of hosts. **(07 Marks)**

7 a. What do you mean by RPC mechanism of client – server interaction? Explain complete RPC mechanism with diagram. **(08 Marks)**
b. Explain the following queuing disciplines : i) FIFO ii) Fair queuing. **(12 Marks)**

8 Write short notes on the following :
a. Random Early Detection (RED) c. DNS
b. SNMP d. Overlaying Networks. **(20 Marks)**

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