Question Paper Code : X 20404

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020

Fourth/Fifth/Sixth/Seventh/Eighth Semester

Computer Science and Engineering

CS 6551 – COMPUTER NETWORKS

(Common to Biomedical Engineering/Electronics and Communication
Engineering/Mechatronics Engineering/Information Technology)

(Regulations 2013)

(Also Common to PTCS 6551 – Computer Network for B.E. Part-Time – Third
Semester – Computer Science and Engineering – Regulations 2014)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. List the types of duplex.

2. What are the ways to address the framing problems ?

3. Mention the importance of using an Ethernet.

4. Define ICMP.

5. Difference between Circuit Switching and Packet Switching.

6. What are the advantages of using fragmentation ?

7. How are transport layer different from session layer ?

8. Differentiate between TCP and UDP.

9. Differentiate HTTP and FTP.

10. Highlight the importance of using MIME.

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PART – B   **(5×13=65 Marks)**

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11. a) Explain the OSI-ISO model of computer networks with neat diagram.

    (OR)

    b) Explain the working principles of sliding window protocol with examples and discuss its various types in detail.   **(7+6)**

12. a) Explain Ethernet Protocol and its physical properties.

    (OR)

    b) Describe in detail about the Address Resolution Protocol with neat diagrams.

13. a) Explain the Open Shortest Path First Protocol with suitable illustrations.

    (OR)

    b) i) Suppose a router receives an IP packet containing 600 data bytes and has to forward the packet to a network with maximum transmission unit of 200 bytes. Assume that IP header is 20 bytes long. Show the fragments that the router creates and specify the relevant values in each fragment header (i.e., total length, fragment offset and more bit).   **(7)**

       ii) Explain about Multicast address.   **(6)**

14. a) Define UDP. Explain in detail about UDP segment structure with diagram and UDP checksum with an example.

    (OR)

    b) Describe the FSM description of TCP congestion control with neat diagram.

15. a) What is SMTP ? Explain the message sending method using SMTP protocol.

    (OR)

    b) i) Explain DNS message format with neat diagram.   **(7)**
       ii) Discuss the Portion of the hierarchy of DNS servers.   **(6)**

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PART – C   **(1×15=15 Marks)**

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16. a) Suppose P, Q and R are network service providers with respective CIDR address allocations C1.0.0.0/8, C2.0.0.0/8, and C3.0.0.0/8. Each provider's customers initially receive address allocations that are a subset of the provider's. P has the following customers :

    PA, with allocation C1.A3.0.0/16

    PB, with allocation C1.B0.0.0/12.

Q has the following customers :

QA, with allocation C2.0A.10.0/20

QB, with allocation C2.0B.0.0/16

Assume there are no other providers or customers.

I) Give routing tables for P, Q and R assuming each provider connects to both of the others.

II) Now assume P is connected to Q and Q is connected to R but P and R are not directly connected. Give tables for P and R.

III) Suppose customer PA acquires a direct link to Q and QA acquires a direct link to P, in addition to existing links. Give tables for P and Q, ignoring R.

(OR)

b) For the network given in Figure 16. b), give the datagram forwarding table for each node. The links are labeled with relative costs; your tables should forward each packet via the lowest-cost path to its destination.
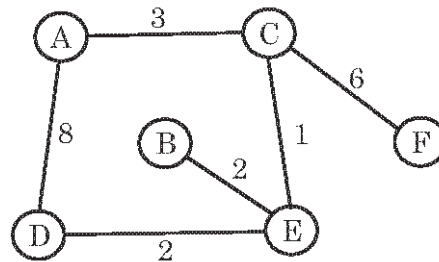

Figure 16. b)

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