BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – B.Tech.(CSE)-2018/B.Tech.(CSE)-2019/B.Tech.(CSE)-2020
Course Name – Computer Networks
Course Code - PCC-CS602
(Semester VI)

Full Marks : 60   **Time : 2:30 Hours**
[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)   1 x 15=15
1. *Choose the correct alternative from the following :*

(i) Choose Which of the following is a popular block coding technique?

   a) Manchester coding   b) Differential Manchester coding
   c) 8B/10B coding   d) NRZ coding

(ii) Choose Which of the following is a disadvantage of using block coding?

   a) Increases the bandwidth requirement b) Decreases the bandwidth requirement
   c) Does not affect the bandwidth requirement   d) Increases the latency

(iii) Recite What is CRC?

   a) A coding technique used to compress data   b) An error correction technique used in communication networks

   c) A security protocol used to encrypt data   d) A protocol used for network routing

(iv) Predict What happens if a node on the network detects that the channel is busy in CSMA/CA?

   a) It waits a random amount of time before attempting to transmit   b) It transmits the data immediately, regardless of the channel status
   c) It sends an acknowledgement frame immediately after receiving a data frame   d) It sends a data frame and an acknowledgement frame together

(v) Choose Which port number is used by Telnet?

   a) 22   b) 23
   c) 80   d) 443

(vi) Predict What is the maximum achievable window size in the Sliding Window protocol?

   a) 1   b) 2
   c) n   d) n/2

(vii) Predict Which protocol is used for retrieving emails from a server?

   a) HTTP   b) FTP
   c) POP3   d) DNS

(viii) Identify the following topology which is known for its scalability and fault tolerance?

a) Bus Topology   b) Star Topology

c) Mesh Topology   d) Ring Topology

(ix) Identify What is the maximum range of Bluetooth technology?

a) 10 meters   b) 50 meters

c) 100 meters   d) 1 kilometer

(x) State Which of the following is not a function of the Data Link Layer?

a) Framing   b) Error Detection and Correction

c) Flow Control   d) Routing

(xi) Define Which protocol is used by the Network Layer to route packets across different networks?

a) TCP   b) UDP

c) IP   d) ARP

(xii) Choose Which of the following is not a function of the Network Layer?

a) Routing   b) Fragmentation

c) Error Correction   d) Congestion Control

(xiii) Generalize the layer of OSI model which is responsible for framing and error detection?

a) Data Link Layer   b) Transport Layer

c) Network Layer   d) Presentation Layer

(xiv) Describe the purpose of an IP address?

a) To identify a specific computer on a network   b) To identify a specific user on a network

c) To encrypt data transmitted over a network   d) To authenticate users on a network

(xv) Choose Which of the following is a connection-oriented protocol ?

a) UDP   b) ICMP

c) TCP   d) HTTP

Group-B
(Short Answer Type Questions)   3 x 5=15

2. Discuss in detail about the packet-switched networks.   (3)
3. Explain a point-to-point topology? How is it different from other network topologies?   (3)
4. Describe the function of SMTP?   (3)
5. Explain the role of the Domain Name System (DNS) in TCP/IP   (3)
6. Suppose a system uses Stop and wait protocol with propagation delay 20 ms. If the frame size is 160 bits and bandwidth is 4kbps when calculate channel utilization of efficiency.   (3)

OR

A router outside the organization receives a packet with the destination address 190.240.7.91/16. Show how it finds the network address to route the packet.   (3)

Group-C
(Long Answer Type Questions)   5 x 6=30

7. Distinguish between TCP and UDP.   (5)
8. distinguish between Pure Aloha and Sloted Aloha ?   (5)
9. Write a detailed note on the ISO-OSI reference model.   (5)
10. Compare IPv4 and IPv6 datagram Headers.   (5)
11. Why dynamic routing is preferred over static routing algorithm in a network, which changes continuously ?   (5)
12. A router with IP address 192.165.88.10 and Ethernet physical address 21:45:AB:4F:66:CD has received a packet for a destination with IP address 192.165.78.23 and Ethernet physical address AB:B7:A2:4F:47:CD. Show the entries in the ARP request packet sent by the router. Encapsulate the ARP request packet in a data link frame. Fill all the fields.   (5)

OR

Suppose an organization is given the block 190.100.0.0/16. The organization needs to (5) divide the address into three groups of customers- i) 1st group has 64 customers; each need 256 addresses. ii) 2nd group has 128 customers; each need 128 addresses. iii) 3rd group has 128 customers; each need 64 addresses.

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