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PJCE

(iv) What kinds of error can Vertical Redundancy check determine? What kinds of errors it cannot determine? (3) (Nov Dec 2006).

The vertical redundancy check (VRC) is used for odd and even parity checking. A way of error checking by attaching a parity bit to each byte of data to be transmitted, which is then tested to determine if the transmission is correct.

7. Name four network topologies and explain them giving all features. (Dec 10, April/May 2010)
8. Explain in detail about HDLC. (May 11, 13, 2007, Nov/Dec 2012)
9. (a) (i) A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is $x^3 + 1$. Show the actual bit string transmitted. Suppose the third bit from the left is inverted during transmission. Show that this error is detected at the receiver's end. (8)
(ii) Explain the following framing techniques with examples:
 - (1) Character count (2)
 - (2) Flag byte with byte stuffing (2)
 - (3) Starting and ending flags, with bit stuffing (2)
 - (4) Physical layer coding violations (2) (N/D 2009)
10. (b) (i) Discuss the limitations of stop and wait protocol (4)
(ii) Explain the window maintenance at the sender and receiver in the sliding window protocol. (6) (A/M'10)
(iii) Compare and contrast the go back -n and selective repeat variants of the sliding window protocol. (6) (N/D 2009), (8 M- Nov/Dec 2008)
11. (i) List the three main functions performed by the data link layer of the ISO/OSI model (3) (Nov/Dec 2006)
12. Explain the various factors contributing to the network performance. (8) (A/M'11)
13. Differentiate go back -n and selective repeat (Nov/Dec'12)
14. Perform a comparative study between the ISO/OSI model and TCP/IP reference model (Nov/Dec'12)

UNIT 2

MEDIA ACCESS & INTERNET WORKING

PART A

1. What is CSMA/CD? (Nov Dec 2011)
Ans: Carrier sense multiple access with collision detection (CSMA/CD) is a Media Access Control method, ✓ a carrier sensing scheme is used. ✓ a transmitting data station that detects another signal while transmitting a frame, stops transmitting that frame, transmits a jam signal, and then waits for a random time interval before trying to resend the frame.
2. What is meant by bridge? (Nov Dec 2011)
Ans: A network bridge connects multiple network segments (network domains) along the data link layer. It is sometimes called a network switch, and it works by using bridging. Traffic from one network is forwarded through it to another network. The bridge simply does what its name entails, by connecting two sides from adjacent networks
3. Differentiate fast ethernet and gigabit ethernet. (Nov Dec 2012)
Ans: The 'Ether' part of Ethernet denotes that the system is not meant to be restricted for use on only one medium type, copper cables, fibre cables and even radio waves can be used.

Fast Ethernet Network was developed as an upgrade to traditional Ethernet Networking. Fast Ethernet improved traditional Ethernet by increasing transfer rates 10 times, from 10 Megabit to 100 Megabit speed.

Gigabit Ethernet Network is an upgrade on Fast Ethernet Network equivalent to Fast Ethernet Networks improvement over Fast Ethernet Network, offering speeds of 1000 Megabits (1Gigabit)

4. What is the difference between switch and bridge? .(Nov Dec 2012)

Ans: The difference between switch and bridge are,

1. *Bridge is is device which divides a network into two. Switch connects multiple networks.*
2. *Bridge are software based and switch is a hardware based.*
3. *Bridge can have upto 16 ports while switch can handle many ports.*
4. *Bridge is rarely used. Switches are frequently used.*
5. Compare a piconet and a scatter net. .(Nov Dec 2008)

Ans: A piconet is the type of connection that is formed between two or more Bluetooth-enabled devices, one device takes the role of 'master', and all other devices assume a 'slave' role for synchronization reasons. scatternet is a number of interconnected piconets that supports communication between more than 8 devices. Scatternets can be formed when a member of one piconet elects to participate as a slave in a second, separate piconet.

6. What are the functions of Bridges? .(Nov Dec 2010)

Ans: A bridge device filters data traffic at a network boundary. Bridges reduce the amount of traffic on a LAN by dividing it into two segments.

Bridges operate at the data link layer (Layer 2) of the OSI model. Bridges inspect incoming traffic and decide whether to forward or discard it. An Ethernet bridge, for example, inspects each incoming Ethernet frame - including the source and destination MAC addresses, and sometimes the frame size - in making individual forwarding decisions.

7. Which class does the following IP address belong to? .(Nov Dec 2006)

(a) 157.143.252.207 (b) 93.31.1.245

Ans:

- ✓ *This IP address comes under Class B.*
- ✓ *This IP address comes under Class A.*

8. Is the size of the ARP packet fixed? Explain.(Nov Dec 2008)

Ans: The ARP packet size must vary because it contains 2 Hardware/MAC addresses in it and 2 different protocol addresses in it. Depending on the datalink and network protocol used the size addresses vary.

9. What is DHCP? .(Nov Dec 2012)

Ans: Dynamic Host Configuration Protocol (DHCP) is a client/server protocol that automatically provides an Internet Protocol (IP) host with its IP address and other related configuration information such as the subnet mask and default gateway.

10. What is meant by circuit switching? .(Nov Dec 2010)

Ans: Circuit switching is a methodology of implementing a telecommunications network in which two network nodes establish a dedicated communications channel (circuit) through the network before the nodes may communicate. The circuit guarantees the full bandwidth of the channel and remains connected for the duration of the communication session. The circuit functions as if the nodes were physically connected as with an electrical circuit.

11. List the two forms in which virtual circuit packet switching is implemented.(Nov Dec 2006)

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Ans: Two forms of virtual circuit packet switching implementations are,

- ✓ Switched Virtual Circuit (SVC)
- ✓ Permanent Virtual Circuit (PVC)

**PVC makes permanent virtual connection between two specific nodes.*

12. Define subnetting. (Nov Dec 2011)

Ans: Subnetting divides a network into several subnetworks (or subnets). All systems (for example, workstations, printers, server, and routers) that exist in the subnet have common network and subnet values, but each must have a unique interface portion of their logical or IP address.

12. What is the data rate of fast ethernet? (May 11)

Ans: 100 Mbits/sec

13. What is Bluetooth standard? (May 11)

Class Power Rang

Class 3 1 MW 10 M

Class 2 2.5 MN 20 M

Class 1 100 MN 100 M

14. What is meant by bridge? (Dec 11)

- ✓ Connected two similar and dissimilar networks.
- ✓ It filters the traffic based on destination address of the frame.

15. Give an account on Private Address (Nov/Dec 2007)

16. What is the meaning of multiple IP address of Router? (Nov/Dec 2007)

17. Compare the performance of 1 – persistent and non-persistent CSMA protocols in terms of channel utilization under varying loads. (Nov/Dec 2009)

18. What is the level of reliability provided by the simple parity scheme in error detection? (Nov/Dec 2009)

19. Define packet Switching (Nov/Dec 2012)

PART B

1. Explain the frame format of IEEE 802.3 in detail.
2. What is CSMA/ CD? Explain. (Nov Dec 2007)
3. Describe the collision avoidance mechanism used in 802.11 wireless LAN. In particular, how such a mechanism solves the Hidden terminal problem. (8) (May June 2007).

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

(ii) What is subnet masking? Discuss.

(iii) How can we prove that we have 2,147,483,643 addresses in class A?

Class A:

Using 8bit for net id.

Using 24bit for host id.

In Class A, only 1 bit represents the class. The remaining bits are available for the addressrepresentation.

(iv) What is the subnetwork address if the destination address is 200.9634.56 and the subset mask is 255.266.240.0? (Nov Dec 2006)

Given Destination Address 200.45.34.56 11001000.00101101.00100