CLO1: Explain the fundamental principles of current network operation including the standards and protocols used in data communication. (C2, PLO1)

Section A: Multiple Choice Questions: 30 Marks
This section consists of 30 questions. Each question carries 1 mark.

1. _____ would use mesh, point-to-point or hub and spoke topologies.

   a. Wide Area Network (WAN)
   b. Personal Area Network (PAN)
   c. Local Area Network (LAN)
   d. Metropolitan Area Network (MAN)

2. Two PCs are configured in a network with the IP addresses of 202.11.10.6 and 192.16.20.4 respectively. The PCs can communicate with _____.

   a. Hub
   b. Router
   c. Switch
   d. Bridge

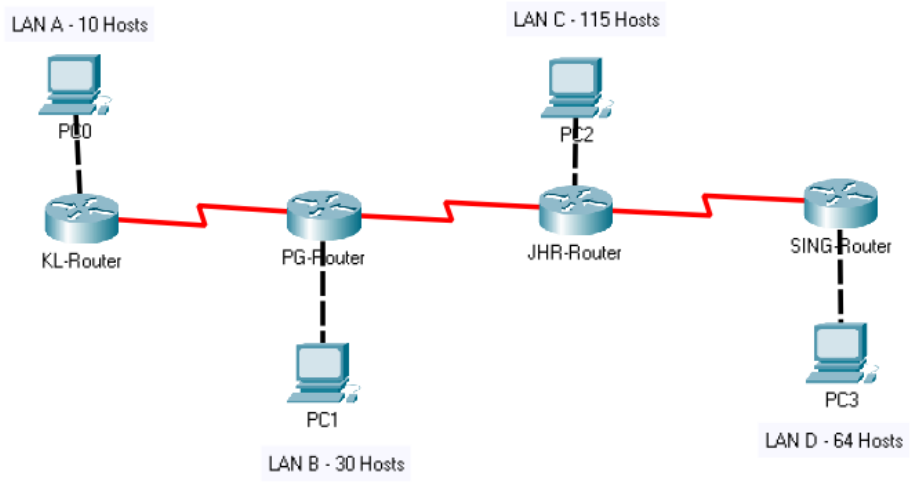
3. In the process of communication, a Facebook client needs to know _____ of its Facebook server.

   a. MAC address
   b. URL
   c. IP address
   d. https

4. _____ command is used to assign the name "KL-Router" to a router.

   a. host KL-Router
   b. hostname "KL-Router"
   c. host name KL-Router
   d. hostname KL-Router

5. Refer to the given exhibit. Identify the subnet mask values for LAN D.



a. 255.255.192.0
b. 255.255.128.0
c. 255.255.255.192
d. 255.255.255.128

6. Refer to the exhibit. Which of the command is run In Router R1 that display the following result?

```
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.10.1    YES manual up                    down
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              10.0.0.1        YES manual up                    up
Serial3/0              unassigned      YES unset  administratively down down
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
R1#
```

a. show ip route
b. show ip interface
c. show running-config
d. show ip interface brief

7. You have two Cisco routers setup back-to-back in a lab using DTE/DCE cables. To which router would you add the clock rate command?

a. The serial port on the DCE router
b. The Ethernet port on the DTE router
c. The Ethernet port on the DCE router
d. The serial port on the DTE router

8. Identify the device that helps prevent bottleneck and data collisions _____.

a. Switch
b. Router
c. Gateway
d. Proxy Server

9. _____ is a network device that is used to transmit the Frames from one LAN to another LAN.

a. Router
b. Bridge
c. Repeater
d. Modem

10. _____ is the computer operating system utility command that allows a user to manually query the DNS servers configured on the device to resolve a given hostname.

a. ping
b. show ip route
c. ipconfig
d. nslookup

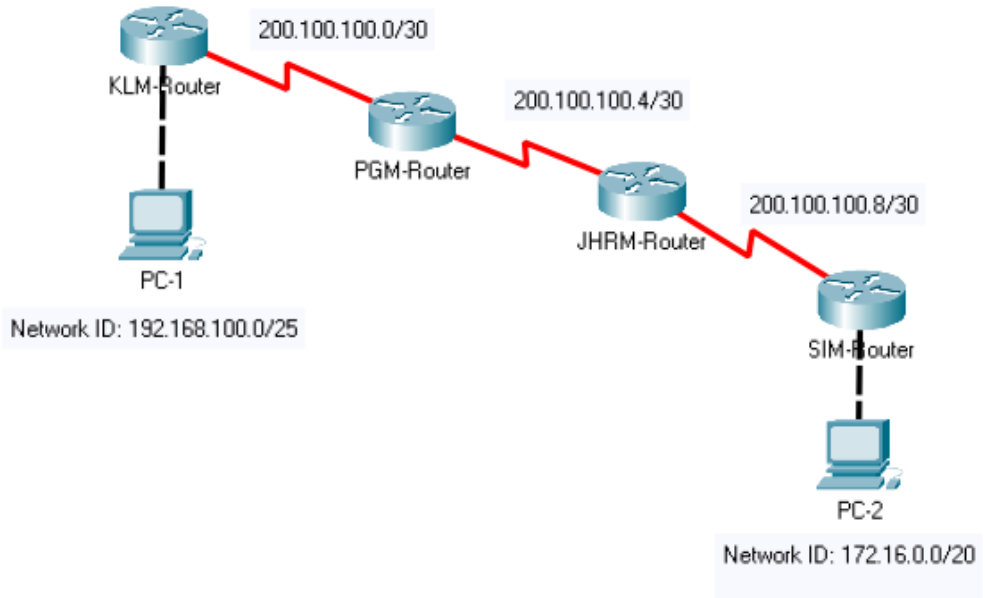
11. _____ layer in the OSI model determines the interface of the system with the user.

a. Presentation Layer
b. Application Layer
c. Network Layer
d. Transport Layer

12. State the process in which the communication takes place in one direction.

a. Half-duplex
b. Simplex
c. Duplex
d. Multiplex

13. Refer to the exhibit. A LAN with network address 172.16.0.0/20 is connected to SIM-Router whose default gateway IP is 172.16.0.1 and the subnet mask for this LAN is 255.255.240.0. How many subnets does this LAN will have?



a. 32
b. 16
c. 8
d. 64

14. Which of the following in the OSI layer merged with the application layer of the TCP/IP model?

a. Session Layer & Transport layer
b. Application Layer & Session Layer
c. Session Layer & Presentation Layer
d. Only Transport Layer

15. The following processes are carried out by the Datalink layer except _____.

a. Framing
b. Error Control
c. Flow Control
d. Channel Coding

16. At which layer of the OSI Model error detection is done while sending and receiving the frames?

    a. Network Layer
    b. Transport Layer
    c. Data link Layer
    d. Physical Layer

17. Mr. A is interacting with a server in a LAN and he is trying to download an account statement of the previous year for auditing purposes. Which protocol will help him to download the statement from the server?

    a. HTTP
    b. HTTPS
    c. FTP
    d. SMTP

18. Which protocol is used when the user communication with Facebook server?

    a. FTP
    b. SMTP
    c. HTTPS
    d. HTTP

19. _____ protocol will send a message to routers if a network outage or bottleneck occurs.

    a. ARP
    b. TCP
    c. IP
    d. ICMP

20. _____ message is sent to the source when the router cannot route the datagram and the datagram is discarded.

    a. Destination Unavailable
    b. Destination Unverified
    c. Destination Unreachable
    d. Destination no-entry

21. _____ protocol is used to store the email messages in the email server.

    a. SMTP
    b. SNMP
    c. POP3
    d. IMAP

22. SMTP protocol is used to send an email from source to destination. Which of the Transport layer protocol support SMTP?

    a. UDP
    b. TCP
    c. POP3
    d. DHCP

23. Under which circumstance will a switch flood a frame out of every port except for the port that the frame was received on?

    a. The frame has the broadcast address as the destination address.
    b. The frame has destination address known as unicast address.
    c. The source address in the frame header is the broadcast address.
    d. The source address in the frame is a multicast address.

24. You need to come up with a TCP/IP addressing scheme for your company. How many network IDs must you allow for when you define the subnet mask for the network?

    a. One for each WAN link and One for each subnet
    b. One for each router interface
    c. One for each NIC installed in each client.
    d. One for each subnet with hosts

25. Which of the following statement is incorrect?

    a. If a host moves from one network to another, its IP address must change.
    b. Routing uses the network portion of the IP address, the path taken by packets travelling to a host with multiple IP addresses depends on the address used.
    c. IP addresses encode both a network and a host on that network, they do not specify an individual machine, but a connection to a network.
    d. All the above.

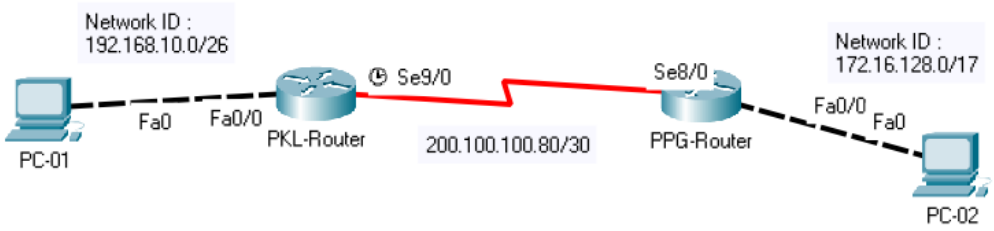
26. A network topology which connects the bi-directional links whereby the link gets synchronize if anyone link is failed.

    a. Star topology
    b. Bus topology
    c. Mesh Topology
    d. Ring Topology

27. _____ is the CIDR value for 16 subnets when the given IP is 10.0.40.103.

    a. 13
    b. 14
    c. 12
    d. 25

28. Refer to the exhibit. PC-01 is connected to PKL-Router via fa0/0 interface. PC-01 is in subnet 1 and PC-02 is connected to PPG-Router via fa0/0 interface and is in subnet 2. If PC-01 is in subnet 1, identify the broadcast IP address of subnet 1 for the given Network ID 192.168.10.0/26.



a. 192.168.10.255
b. 192.168.10.11
c. 192.168.10.63
d. 192.168.10.0

29. Given a IPv6 address 2001:AC92:0000:0000:0189:EC21:0000:EC72. Identify its alternative IPv6 address that can minimize the address space.

a. 2001:AC92: 0189:EC21:0000:EC72
b. 2001:AC92: 0189: EC21:EC72
c. 2001:AC92::189: EC21:0:EC72
d. 2001:AC92::189: EC21:EC72

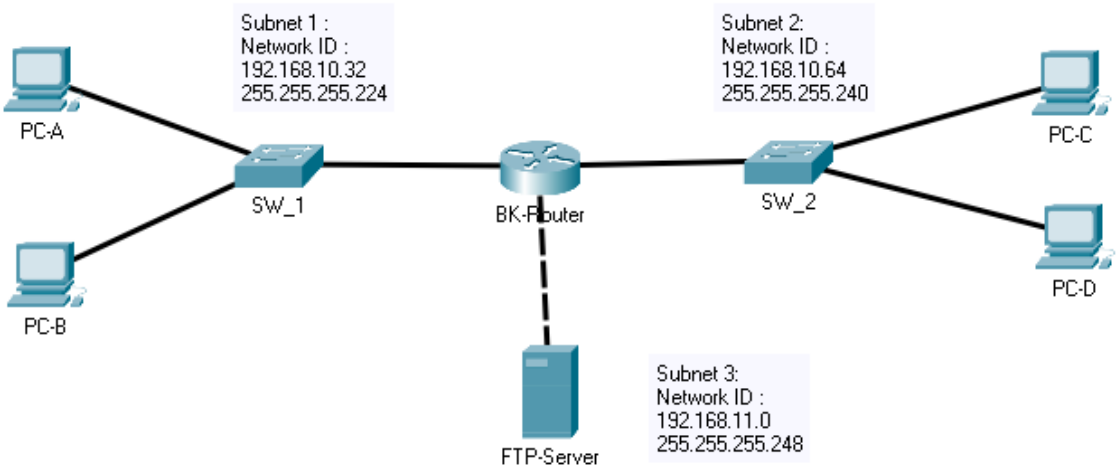
30. A technician with a PC is using multiple applications while connected to the Internet. How can the PC keep track of the data flow between multiple application sessions and have each application receive the correct packet flows?

a. The data flow is being tracked based on the source port number that is used by each application.
b. The data flow is being tracked based on the destination MAC address of the technician PC.
c. The data flow is being tracked based on the source IP address that is used by the PC of the technician.
d. The data flow is being tracked based on the destination IP address that is used by the PC of the

Section B: Structured Questions: 20 Marks

This section consists of 2 questions. Answer all the questions.

1. Refer to the exhibit below. Answer the following questions.



a) Identify the IP address of the default gateway in the exhibit above if the last valid IP address for each subnet will be assigned as the gateway IP address. [3 Marks]

Ans: IP address for the default gateway for each subnet:
Subnet 1 default gateway IP address – 192.168.10.62/27
Subnet 1 default gateway IP address – 192.168.10.78/28
Subnet 1 default gateway IP address – 192.16811.6/29

b) Discuss any **TWO (2)** features of default gateway in relations of the exhibit above. [4 Marks]

Ans:

- Basic features of default gateway is to perform packet forwarding and optimal path selections.
- A router or layer 3 switch can be a default gateway in a network above, where the default gateway must have an IP address in the same range as the rest of the LAN. For example, in figure above, the router having an IP address 192.168.5.60, where it is the range of 192.168.5.45 to 192.168.5.100.
- A default gateway can route PC A, PC B, and PC C to another network that is to the server in remote network through Internet/WAN.
- Default gateway works in the IP address where to route the traffic from a LAN to remote network (Internet), a default gateway needs to choose next hop destination defined in the routing table.

– ***** Or any other relevant answers are accepted. (Each correct point carries 2 marks. Total mark is 4)

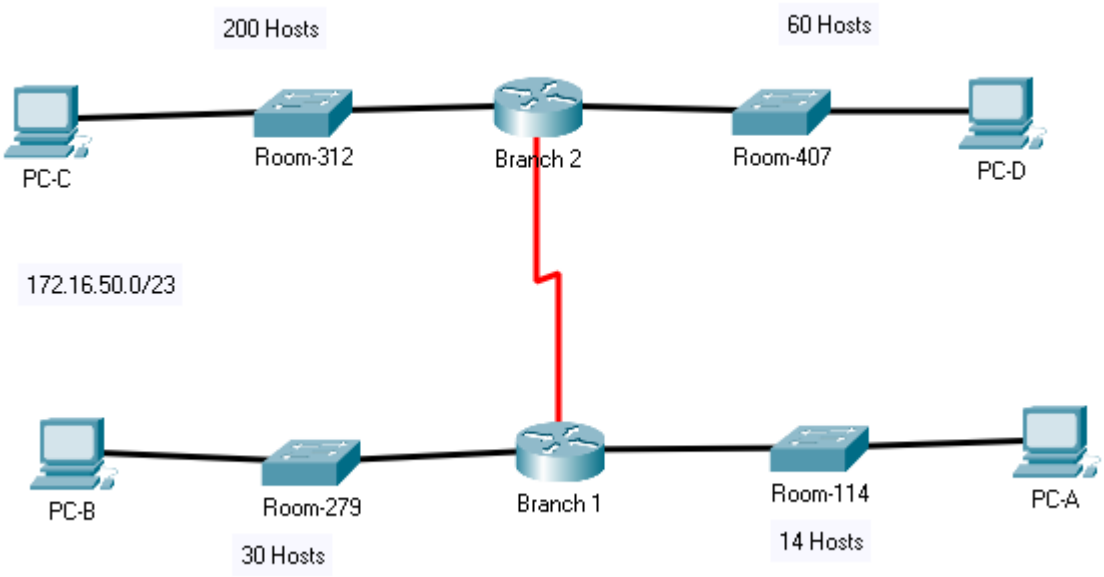
c) Proposed any routing protocol that can be deployed in the above network layout to establish connections among all the end devices. Explain your answer. [3 Marks]

Ans:

– No routing protocol is required to be deployed in the above network. All the end devices can communicate with each other without any routing protocol because all the subnets are directly connected to only one router. Therefore, there is no need to deploy any routing protocol in the above layout unless if there is another router added to the topology.

(Correct answer and justification carry 3 marks)

2. Refer to the exhibit below. Answer the following questions.



a) State the Network ID and subnet mask for the above subnets. Given the IP address is 172.16.50.0/23. [5 Marks]

Ans:

– Room 312 [200 hosts] – Network ID is 172.16.50.0/24 & Subnet Mask is 255.255.255.0
– Room 407 [60 hosts] – Network ID is 172.16.51.0/26 & Subnet Mask is 255.255.255.192
– Room 279 [30 hosts] – Network ID is 172.16.51.64/27 & Subnet Mask is 255.255.255.224
– Room 114 [14 hosts] – Network ID is 172.16.51.96/28 & Subnet Mask is 255.255.255.240
– Branch 1 to Branch 2 [2 hosts) – Network ID is 172.16.51.112/30 & Subnet Mask is 255.255.255.252

(Each correct answer carries 1 mark. Both answers (network ID and subnet mask) need to be correct to obtain 1 mark. Total mark is 5)

b) Identify the IP address of PC-A and PC-B if the second valid IP address is being assigned to them. [2 Marks]

Ans:

- PC-A IP address – 172.16.51.98/28
- PC-B IP address – 172.16.51.66/27

c) Briefly explain the potential issue that will occur if the default gateway IP address is wrongly configured on both PC-A and PC-B. [3 Marks]

Ans:

- All the packets from PC-A and PC-B that intended to be sent to the other subnets are not able to leave the network without the correct default gateway IP address. The main issue will be PCs are unable to route any packets from the LAN to any other remote network.

(Correct justification carry 3 marks)

END OF QUESTIONS

CLO1: Explain the fundamental principles of current network operation including the standards and protocols used in data communication. (C2, PLO1)

Section A: Multiple Choice Questions: 30 Marks
This section consists of 30 questions. Each question carries 1 mark.

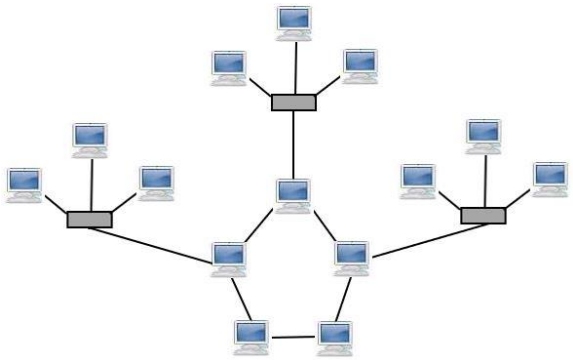
1. Which term refers to a network that provides secure access to the corporate offices by suppliers, customers and collaborators?
   a. Internet
   b. Intranet
   c. Extranet
   d. Extendednet

2. Two PCs are configured in a network with the IP addresses of 202.11.10.6 and 192.16.20.4 respectively. The PC is able to communicate with _____.
   a. Hub
   b. Router
   c. Switch
   d. Bridge

3. Which interface allows remote management of a Layer 2 switch?
   a. the AUX interface
   b. the console port interface
   c. the switch virtual interface
   d. the first Ethernet port interface

4. _____ is the default subnet mask for class C IP network
   a. 174.16.1.1
   b. 192.168.1.0
   c. 255.255.0.0
   d. 255.255.255.0

5. Consider the diagram and identify the type of topology used.



   a. Star
   b. Ring
   c. Mesh
   d. Hybrid

6. Refer to the exhibit. Which of the command is run In Router R1 that display the following result?

```
Interface              IP-Address      OK? Method Status                Protocol
FastEthernet0/0        192.168.10.1    YES manual up                    down
FastEthernet1/0        unassigned      YES unset  administratively down down
Serial2/0              10.0.0.1        YES manual up                    up
Serial3/0              unassigned      YES unset  administratively down down
FastEthernet4/0        unassigned      YES unset  administratively down down
FastEthernet5/0        unassigned      YES unset  administratively down down
R1#
```

a. show ip route
b. show ip interface
c. show running-config
d. show ip interface brief

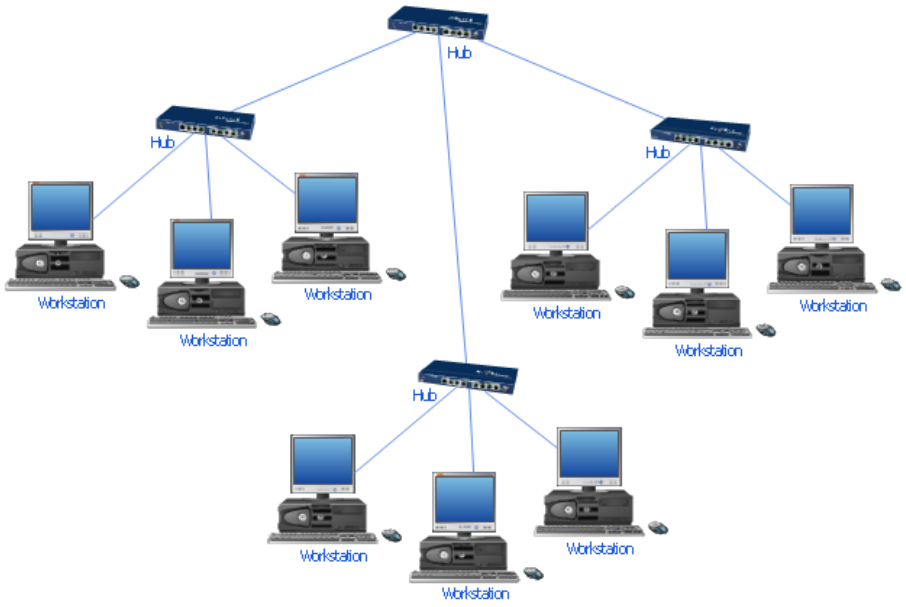
7. You have two Cisco routers setup back-to-back in a lab using DTE/DCE cables. To which router would you add the clock rate command?
a. The serial port on the DCE router
b. The Ethernet port on the DTE router
c. The Ethernet port on the DCE router
d. The serial port on the DTE router

8. Identify the device that helps prevent bottleneck and data collisions _____.
a. Switch
b. Router
c. Gateway
d. Proxy Server

9. What is a primary role of the Physical layer in transmitting data on the network?
a. create the signals that represent the bits in each frame on to the media
b. provide physical addressing to the devices
c. determine the path packets take through the network
d. control data access to the media

10. _____ is the computer operating system utility command that allows a user to manually query the DNS servers configured on the device to resolve a given hostname.
a. ping
b. show ip route
c. ipconfig
d. nslookup

11. Consider the given figure and identify the type of network.



a. Wide Area Network
b. Local Area Network
c. Metropolitan Area Network
d. Home Network

12. When you want to interact with network for the purpose of communication such as Facebook, Twitter etc. Then you will start your communication with _____ layer.
a. Presentation Layer
b. Application Layer
c. Network Layer
d. Transport Layer

13. State the process in which the communication takes place in one direction.
a. Half-duplex
b. Simplex
c. Duplex
d. Multiplex

14. What three items are contained in an Ethernet header and trailer? (Choose three.)
a. source IP address
b. source MAC address
c. destination IP address
d. destination MAC address
e. error-checking information

15. The following processes are carried out by the Datalink layer except _____.
a. Framing
b. Error Control
c. Flow Control
d. Channel Coding

16. Errors are common in a network when the Frames are sent and received that cannot be viewed by human eyes nor resolved by any human. This error cannot be neglected and detected by _____ layer of the OSI model.
    a. Network Layer
    b. Transport Layer
    c. Data link Layer
    d. Physical Layer

17. Mr. A is interacting with a server in a LAN and he is trying to download an account statement of the previous year for auditing purposes. Which protocol will help him to download the statement from the server?
    a. HTTP
    b. HTTPS
    c. FTP
    d. SMTP

18. What IPv4 header field identifies the upper layer protocol carried in the packet?
    a. Protocol
    b. Identification
    c. Version
    d. Differentiated Services

19. Which protocol will send a message to routers if a network outage or bottleneck occurs?
    a. ARP
    b. TCP
    c. IP
    d. ICMP

20. _____ message is sent to the source when the router cannot route the datagram and the datagram is discarded.
    a. Destination Unavailable
    b. Destination Unverified
    c. Destination Unreachable
    d. Destination no-entry

21. Email server such as Gmail, Yahoo mail etc, receives and store huge amount of email every day in a server and sometimes these emails were retrieved from the email server that is done by _____ protocol.
    a. SMTP
    b. SNMP
    c. POP3
    d. IMAP

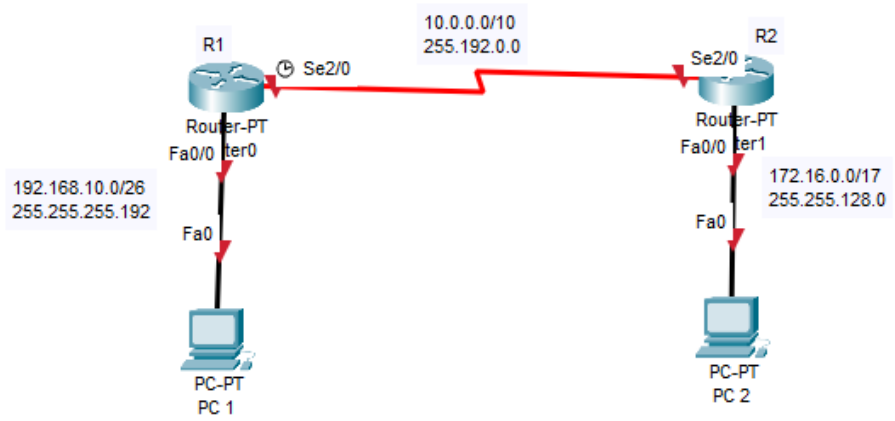
22. SMTP protocol is used to send an email from source to destination. Which of the Transport layer protocol support SMTP?
    a. UDP
    b. TCP
    c. POP3
    d. DHCP

23. One of the Routers Ethernet port was assigned an IP address of 194.168.10.2/25, what would be the valid subnet address of this host?
    a. 192.168.10.0
    b. 172.11.0.0
    c. 194.168.10.0
    d. 194.168.10.255

24. You need to come up with a TCP/IP addressing scheme for your company. How many network IDs must you allow for when you define the subnet mask for the network?
    a. One for each WAN link and one for each subnet
    b. One for each router interface
    c. One for each NIC installed in each client
    d. One for each subnet with hosts

25. What is the subnet mask value for 500 subnets when the given IP is 175.16.2.5?
    a. 255.255.255.128
    b. 255,255.254.0
    c. 255.255.128.0
    d. 255.255.255.192

26. Refer to the exhibit. PC 1 is connected with R1 fa0/0 where PC 1 is in subnet 1 and PC2 is connected with R2 fa0/0 and in subnet 2. If PC 1 is in subnet 1 then identify the broadcast IP address of subnet 1 for the given IP address 192.168.10.0/26.



    a. 192.168.10.255
    b. 192.168.10.11
    c. 192.168.10.63
    d. 192.168.10.0

27. A network topology which connects the bi-directional links whereby the link gets synchronize if anyone link is failed.
    a. Star topology
    b. Bus topology
    c. Mesh Topology
    d. Ring Topology

28. Identify the subnet mask value for the given IP 10.0.0.15/13.
    a. 255.128.0.0
    b. 255.248.0.0
    c. 255.192.0.0
    d. 255.255.224.0

29. A technician with a PC is using multiple applications while connected to the Internet. How the PC is able to keep track of the data flow between multiple application sessions and have each application receive the correct packet flows?
    a. The data flow is being tracked based on the source port number that is used by each application
    b. The data flow is being tracked based on the destination MAC address of the technician PC
    c. The data flow is being tracked based on the source IP address that is used by the PC of the technician
    d. The data flow is being tracked based on the destination IP address that is used by the PC of the

30. What is the CIDR value for 16 subnets when the given IP is 10.0.40.103?
    a. 13
    b. 14
    c. 12
    d. 25

Section B: Structured Questions: 20 Marks
This section consists of 3 questions. Answer all the questions.

31. IP addresses and MAC addresses are very important for data communication. Discuss how IP addresses and MAC addresses are different from each other (Any Five points). (5 Marks)

Answers:

- MAC address is a unique hardware identification number that is assigned to a NIC (Network Interface Controller/ Card), whereas the IP address is an address that helps you to identify a network connection.
- MAC address is assigned by the manufacturer of the hardware interface while the IP address is assigned by the network administrator or Internet Service Provider (ISP).
- Mac address defines the devices identity, but IP address describes how the devices are connected to the network.
- MAC addresses can be used for broadcasting, on the other hand, IP address can be used for broadcasting or multicasting.

- The MAC address is implemented in the Data-Link layer of the OSI or TCP/IP reference model. In contrast, the IP address is implemented in the Network layer of the TCP/IP or OSI model.

32. Assuming you are using a Class C IP address (195.16.1.0) and you need to create the following numbers of subnets for your network plan (as per stated in item a to below). For each of the numbers of required subnets below, provide how many bits would you borrow as subnet bits and what would be the subnet mask? (5 Marks)

    1) 5 subnets
    2) 3 subnets
    3) 8 subnets
    4) 10 subnets
    5) 25 subnets

Answers:

1) 5 subnets – Borrow 3 bits (2^3 = 8) and Subnet Mask is 255.255.255.224

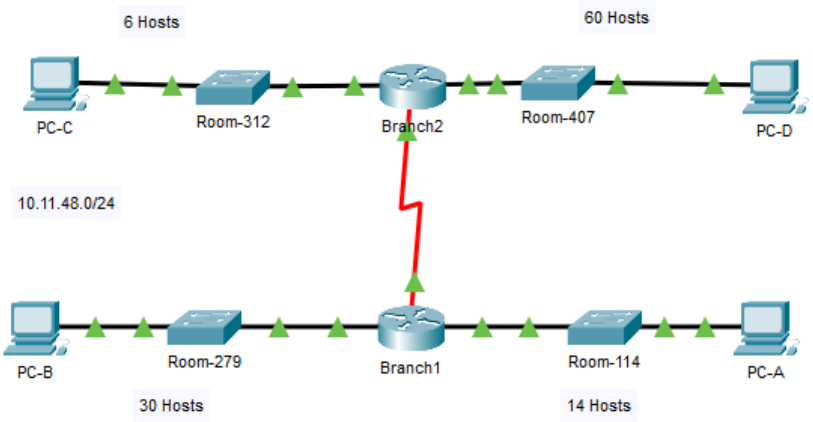
2) 3 subnets - Borrow 2 bits (2^2 = 4) and Subnet Mask is 255.255.255.192

3) 8 subnets - Borrow 3 bits (2^3 = 8) and Subnet Mask is 255.255.255.224

4) 10 subnets - Borrow 4 bits (2^4 = 16) and Subnet Mask is 255.255.255.240

5) 25 subnets - Borrow 5 bits (2^5 = 32) and Subnet Mask is 255.255.255.248

33. Refer to the exhibit below. Identify the Network ID and subnet mask for the following subnets. Given the IP address is 10.11.48.0/24. [10 Marks]



Answers:

1) Room-407 [60 Hosts] – Network ID is 10.11.48.0 and Subnet Mask is 255.255.255.192

2) Room-279 [30 Hosts] – Network ID is 10.11.48.64 and Subnet Mask is 255.255.255.224

3) Room-114 [14 Hosts] – Network ID is 10.11.48.96 and Subnet Mask is 255.255.255.240

4) Room-312 [6 Hosts] – Network ID is 10.11.48.112 and Subnet Mask is 255.255.255.248

5) Branch 1 to Branch 2 [2 Hosts] – Network ID is 10.11.48.120 and Subnet Mask is 255.255.255.252

(Each Point contains 1 Mark. Total mark = 10)

END OF QUESTIONS

ONLINE- FINAL EXAM
CT043-3-1-IN Introduction to Networking

There are TWO sections in this exam and answer ALL the questions

Duration : 90 mins ***Total Marks: 50***

Section "A" : MCQ = 30 Marks

Section "B" : Short Answers = 20 marks.

SECTION A

(30 marks)

1. What is the purpose of protocols in data communications?

a) Specifying the device operating systems that will support the communication.
b) Dictating the content of the message sent during communication.
c) Specifying the bandwidth of the channel or medium for each type of communication.
d) Providing the rules required for a specific type of communication to occur.

2. During a routine inspection, a technician discovered that software installed on a computer and secretly collecting data about websites that were visited by users of the computer. Which type of threat is affecting this computer?

a) Spyware
b) Zero-day attack
c) Identity theft
d) DoS attack

3. What process is used to place one message inside another message for transfer from the source to the destination?

a) Decoding
b) Encapsulation
c) Access Control
d) Flow Control

4. What subnet does the IP address 10.1.100.50 belong if a subnet mask of 255.255.0.0 is used?

a) 10.0.0.0
b) 10.1.0.0
c) 10.1.100.0
d) 10.1.100.32

5. What is the dotted decimal representation of the IPv4 address which is represented as the binary string 00001010.01100100.00010101.00000001?

a) 100.10.11.1
b) 10.100.21.1
c) 10.10.20.1
d) 100.21.10.1

6. Which command can be used on a Cisco router to display all interfaces, the IPv4 address assigned, and the status?

a) Show ip route
b) Show interface fa0/1
c) ping
d) show ip interface brief

7. What will a Layer 2 switch do when the destination MAC address of a received frame is not in the MAC table?

a) It broadcasts the frame out of all ports on the switch.
b) It notifies the sending host that the frame cannot be delivered.
c) It forwards the frame out of all ports except for the port at which the frame was received.
d) It initiates an ARP request.

8. Which characteristic of the network layer in the OSI model allows carrying packets for multiple types of communications among many hosts?

a) The de-encapsulation of headers from lower layers
b) The selection of paths for and direct packets toward the destination
c) The ability to operate without regard to the data that is carried in each packet
d) The ability to manage the data transport between processes running on hosts

9. Which CLI mode allows users to access all device commands, such as those used for configuration, management, and troubleshooting?

a) Global Configuration mode
b) Interface configuration mode
c) User EXEC mode
d) Privileged EXEC mode

10. What statement illustrates a drawback of the CSMA/CD access method?

a) Deterministic media access protocols slow network performance.
b) It is more complex than non-deterministic protocols.
c) Collisions can decrease network performance.
d) CSMA/CD LAN technologies are only available at slower speeds than other LAN technologies.

11. After troubleshooting a router, the network administrator wants to save the router configuration so that it will be used automatically the next time that the router reboots. What command should be issued?

a) copy startup-config flash
b) copy running-config startup-config
c) reload
d) copy startup-config running-config

12. How does the service password-encryption command enhance password security on Cisco routers and switches?

a) It encrypts passwords as they are sent across the network.
b) It encrypts passwords that are stored in router or switch configuration files.
c) It requires that a user type encrypted password to gain console access to a router or switch.
d) It requires encrypted passwords to be used when connecting remotely to a router or switch with Telnet.

13. What is the complete range of TCP and UDP well-known ports?

a) 0 - 255
b) 256 – 1023
c) 0 - 1023
d) 1024 – 49151

14. Which component is designed to protect against unauthorized communications to and from a computer?

a) Firewall
b) Antivirus
c) Port scanner
d) Antimalware

15. What factor should be considered in the design of a small network when devices are being chosen?

a) Traffic Analysis
b) Cost of devices.
c) Redundancy.
d) ISP

16. IETF is the standards organization is concerned with the Request for Comments (RFC) documents that specify new protocols and update existing ones. (TRUE/FALSE).

Ans: TRUE

17. ..... contains protocols used for process-to-process communications in the OSI model.

a) Application Layer
b) Data link Layer
c) Session Layer
d) Network Layer

18. An employee wants to access the network of the organization remotely, in the safest possible way. What network feature would allow an employee to gain secure remote access to a company network?

a) ACL
b) VPN
c) IPS
d) IDS

19. A college is building a new dormitory on its campus. Workers are digging in the ground to install a new water pipe for the dormitory. A worker accidentally damages a fiber optic cable that connects two of the existing dormitories to the campus data center. Although the cable has been cut, students in the dormitories only experience a very short interruption of network services. What characteristic of the network is shown here?

a) Fault Tolerance
b) Integrity
c) Security
d) QoS

20. Which access method would be most appropriate if you were in the equipment room with a new switch that needs to be configured?

a) SSH
b) Telnet
c) Console
d) AUX

21. Which IOS mode provides greater control over all commands and features?

a) Global Configuration mode
b) Privileged EXEC mode
c) Interface sub configuration mode
d) Line console sub configuration mode

22. What is the procedure for converting data into a format suitable for transmission?

a) Formatting
b) Encapsulation
c) Segment
d) Encoding

23. What does the PDU imply whenever it refers to a transport layer?

a) Packet
b) Bits
c) Segment
d) Frame

24. A web client is sending a request for a webpage to a web server. From the perspective of the client, what is the correct order of the protocol stack that is used to prepare the request for transmission?

a) HTTP, TCP, IP, Ethernet
b) Ethernet, TCP, IP, HTTP
c) HTTP, IP, TCP, Ethernet
d) Ethernet, IP, TCP, HTTP

25. Which of the following is NOT a component of fibre optics?

a) Outer Jacket
b) Core
c) Cladding
d) Copper wire

26. IP version 4 is composed of four octets, which are four parts of a string of bits. In each octet, how many bits are there?

a) 10
b) 12
c) 8
d) 4

27. The concept of _____ in a network refers to frequency of failure and time taken for the network to recover from a failure by having a proper backup and disaster recovery plan.

a) Security
b) Management
c) Reliability
d) Monitoring

28.Which of the following is NOT the benefit of a network?

a) Facilitate communication between different users.
b) Ability to share hardware and software.
c) Sharing data or files between users
d) Free access to the Internet at all time

29.An author is transferring one chapter document from a personal computer to a book publisher's file server. In this network model, what part does the personal computer play?

a) Master
b) Slave
c) Client
d) Server

30. Which address is the unique hexadecimal address which also called as Physical Address that is permanently stored in the Network Interface Card (NIC).

a) IP Address
b) Port Address
c) MAC address
d) Application address

SECTION B

Answer ALL the questions. ***Total = 20 Marks***

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31. The current work has changed because of globalization. Virtual teams, mobile staff, and telecommuters working from home must always all exchange information. Employees, suppliers, partners, and consumers in modern companies need networks that can link them regardless of their location, whether it is across town or halfway around the world. Employees can safely access company data using remote networking through a VPN. Routers and switches are the foundation for all types of business communications, including data, speech, video, and wireless connectivity. They will help you maximize efficiency, cut costs, and boost protection and customer support, all of which can help the company's bottom line.

Discuss how to set up a routing link with multiple networks and how to facilitate switching in a workplace network. (10 Marks)

Answers:

Routers are used to tie multiple networks together. For example, router use to connect networked computers to the Internet and share an Internet connection among many users. The router will act as a dispatcher, choosing the best route for information to travel for quick received.

Routers analyze the data being sent over a network, change how it is packaged and send it to another network or over a different type of network. They connect business to the outside world, protect your information from security threats, and can even decide which

computers get priority over others.

Depending on business and networking plans can choose from routers that include different capabilities.

Switches are used to connect multiple devices on the same network within a building or campus. For example, a switch can connect computers, printers, and servers, creating a network of shared resources. The switch would serve as a controller, allowing the various devices to share information and talk to each other. Through information sharing and resource allocation, switches save cost and increase productivity.

Basic types of switches: managed and unmanaged.

An unmanaged switch works out of the box and does not allow to make changes. Home-networking equipment often will have unmanaged switches.

A managed switch allows access to program it. This provides greater flexibility because the switch can be monitored and adjusted locally or remotely to give control on how traffic travels over the network and who has access to your network.

Any relevant answers also applicable.

Router discussion = 5 Marks.
Switched discussion = 5 Marks.
0 Mark - Not answered.
Router discussion = 0 Mark.
Switched discussion = 0 Mark.

32. Single mode and multimode fiber cables are the two most popular types of fiber cables. Even though multimode cable has a greater diameter, both cables have high bandwidth at high speeds. A single mode will extend the range.

a) What are Ethernet LANs 10Base2, 10Base5, and 10BaseT? (6 Marks)

b) Describe the fiber optical cables? (4 Marks)

Answers:

a) What are Ethernet LANs 10Base2, 10Base5, and 10BaseT? (6 Marks)

10Base2 an Ethernet term meaning a maximum transfer rate of 10 Megabits per second that uses base band signaling, with a contiguous cable segment length of 200 meters. Known as Thinnet. **(2 Marks)**

10Base5 an Ethernet term meaning a maximum transfer rate of 10 Megabits per second that uses baseband signaling, with a contiguous cable segment length of 500 meters. Known as Thicknet. **(2 Marks)**

10BaseT an Ethernet term meaning a maximum transfer rate of 10 Megabits per second that uses two pairs of twisted-pair base band signaling, with a contiguous cable segment length of 100 meters. **(2 Marks)**

b) Describe the properties of fiber optical cables. (4 Marks)

Fiber optics, or optical fiber, refers to the medium and the technology associated with the transmission of information as light pulses along a glass or plastic strand or fiber. Fiber optics is used for long-distance and high-performance data networking.
Fiber optics is also commonly used in telecommunication services such as internet, television, and telephones. Fiber optic cables are used as they hold several advantages over copper cables, such as higher bandwidth and transmit speeds.

Any relevant answer also applicable.

Marks:
Fiber Optical cables = 4 Marks.

Ethernet LANs = 6 Marks.
Fiber Optical cables = 4 Marks.