Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Q: differentiate between IP and transport protocol with the help of example. **(2 Marks)**
Answer: - (Page 119)
1-IP provides computer-to-computer communication while TP provide application-to-application communication.
2-IP source and destination addresses are computers while TP need extended addressing mechanisms to identify applications
3-IP is also called machine-to-machine communication while TP are called end-to-end communication.

Q: Give the main advantage and disadvantage of RIP. **(2 Marks)**
Answer: - click here for detail
The biggest advantage of RIP is that it is simple to configure and deploy.
The biggest disadvantage of RIP is its inability to scale to large or very large networks. The maximum hop count used by RIP routers is 15.Another disadvantage of RIP is its high recovery time.

Q: Tel the first assignable IP address from a 128.140.80.24/20. **(2 Marks)**
Answer: - Click here for detail
The host address range for this subnet is 128.140.80.1 - 128.140.95.254, so the first assignable IP address is 128.140.80.1.

Q: how was the NAT implemented? **(2 Marks)**
Answer: - (Page 130)
We can see that the old and new values of IP source field and destination field are shown with their directions.

Direction	Field	Old Value	New Value
out	IP Source	10.0.0.1	128.10.24.6
in	IP Destination	128.10.24.6	10.0.0.1

NAT device stores state information in table. The value is entered in the table when NAT box receives outgoing datagram from new.

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Q: IS ATM including LAN and WAN network. If yes what kind of connection is established? (2 Marks)
Answer: - (Page 66)
Yes it includes LAN and WAN network and established connection-oriented connection.

Q: is IP multicasting beneficial? Defend your answer with proper reason. (3 Marks)
Answer: - Click here for detail
We assume that IP multicast is more beneficial for the channels with a high popularity, and therefore these channels will be preferred when the number of available multicast groups is smaller than the number of channels.

Q: Can the length of the segment be increased 500 meter by adding three repeater one with each segment. It can be done or not. (3 Marks)
Answer: (Page 49)

One repeater doubles, two repeaters triple the maximum cable length limitation. It is to be noted that we cannot increase the maximum cable length as many times as we wish by just adding repeaters.

Q: How an administrator can handle static and dynamic routing. (3 Marks)
Answer: - Click here for detail
Routing can be handled by a static routing table built by the system administrator. Static tables do not dynamically adjust to changing network conditions, so each change in the table is made manually by the network administrator.

Routing can be handled by a dynamic routing table that responds to changing network condition. Dynamic routing tables are built by routing protocols.

Q: IS TCP/IP suit including ARP. What kind of messages are in ARP. (3 Marks)
Answer: - (Page 97)
The TCP/IP protocol suite includes an Address Resolution Protocol (ARP).
The ARP standard defines two basic message types:
• Request
• Response

Q: Traceroute continues to increment the Time To Live until the value is large enough for the datagram to reach its final destination. What happens when the TTL is sufficiently large for the datagram to reach its destination? (3 Marks)
Answer: - Click here for detail
To learn when a datagram reaches its destination, traceroute sets the UDP destination port number in the datagram to a very large value that the destination host is unlikely to be using. When a host receives a datagram destined to it containing a destination port number that is unused locally, it sends an ICMP port-unreachable error to the source.

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Q: describe characteristics of BGP. **(5 Marks)**
Answer: - (Page 138)
It is most popular Exterior Gateway Protocol in Internet. It has following characteristics:
"It provides routing among autonomous systems (EGP).
"It provides policies to control routes advertised.
"It uses reliable transport (TCP).
"It gives path of autonomous systems for each destination.
"Currently the EGP is of choice in the Internet.
"The current version is four (BGP-4).
"It provides facilities for Transit Routing.

Q: describe IPV6 addressing notation. **(5 Marks)**
Answer: - (Page 114)

128-bit addresses unwisely in dotted decimal; requires 16 numbers:
105.220.136.100.255.255.255.255.0.0.18.128.140.10.255.255

Groups of 16-bit numbers in hex separated by colons – colon hexadecimal (or colon hex).
69DC: 8864:FFFF: FFFF: 0:1280:8C0A:FFFF

Zero-compression – series of zeroes indicated by two colons
FF0C: 0:0:0:0:0:0:B1
FF0C::B1

IPv6 address with 96 leading zeros is interpreted to hold an IPv4 address.

Q have there is a technique for achieving reliability through TCP. **(5 Marks)**
Answer: - (Page 123)
Reliability is the responsibility of the Transport layer. In TCP/IP, TCP provides reliable transport service. Most Internet applications use TCP as no other protocol has proved to work better.

SERVICE PROVIDED BY TCP:

Following are the services provided by TCP:
• Connection-oriented service
• Point-to-point
• Complete reliability
• Full-duplex communication
• Stream interface
• Reliable connection startup
• Graceful connection shutdown

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Is there any technique for achieving reliability through TCP? **(5 Marks)**
Answer: - rep

2. Give reasons for which IPv4 need to be changed? **(5 Marks)**
Answer:- (Page 110)
One of the parameters, which motivated IP for change, is address space. The 32-bit address space allows for over a million networks.

But most networks are class C and too small for many organizations. 214 class B network addresses already almost exhausted (and exhaustion was first predicted to occur, a couple of years ago).

The second parameter is type of service, the IP provides. Different applications have different requirements for delivery reliability and speed. Current IP has type of service that is not often implemented. Another factor for the motivation for change is multicast.

3. In a star organization there are 120 systems connected in a network. Give your comments about delay; delay should be smaller or larger. Give reasons? **(5 Marks)**

4. How TCP provides reliability? **(3 Marks)**
Answer: - (Page 125)
TCP achieves reliability by retransmission. An acknowledgement is used to verify that data has arrived successfully. If acknowledgement does not arrive, the previous data is retransmitted.

5. How TCP and IP interact with each other? **(3 Marks)**
Answer: - (Page 123)
TCP uses IP to carry messages. TCP message is encapsulated in IP datagram and sent to the destination. On the destination host, IP passes the contents to TCP. It is shown in the figure below.

6. Describe four factors for network classification? **(2 Marks)**
Answer: - (Page 4)
Computer networks are classified by four factors which are as follow:
1) BY SIZE:
2) BY CONNECTIVITY:
3) BY MEDIUM:
4) BY MOBILITY:

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Q1- What is ICMP and what type of errors internet layer can detect? **(5 Marks)**

Answer: - (Page115)

Internet control Message Protocol (ICMP) defines error and informational messages. These are given as follows:

1. ERROR MESSAGES:

These are as follows:

- Source quench
- Time exceeded
- Destination unreachable
- Redirect
- Fragmentation required

Q2- In which situation RIP support for default routers? **(5 Marks)**

Q3- Give Pros and Cons of static and Dynamic routing. **(5 Marks)**

Answer: - Click here for detail

Pros and Cons of Static Routing

- Static routing is not really a routing protocol. Static routing is simply the process of manually entering routes into a device's routing table via a configuration file that is loaded when the routing device starts up.
- Static routing is the simplest form of routing, but it is a manual process.
- Use static routing when you have very few devices to configure (<5) and when you know the routes will probably never change.
- Static routing also does not handle failures in external networks well because any route that is configured manually must be updated or reconfigured manually to fix or repair any lost connectivity.

Pros and Cons of Dynamic Routing

- Dynamic routing protocols are supported by software applications running on the routing device (the router) which dynamically learn network destinations and how to get to them and also advertise those destinations to other routers.
- A router using dynamic routing will 'learn' the routes to all networks that are directly connected to the device.
- Next, the router will learn routes from other routers that run the same routing protocol (RIP, RIP2, EIGRP, OSPF, IS-IS, BGP etc). Each router will then sort through it's list of routes and select one or more 'best' routes for each network destination the router knows or has learned.
- Dynamic routing protocols have the ability to adapt to logical network topology changes, equipment failures or network outages 'on the fly'.

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Q4- How ICMP used to test different tools? **(3 Marks)**

Answer:- (Page 117)

ICMP can also be used to test different tools. An Internet host A, is reachable from another host B, if datagrams can be delivered from A to B. Ping program tests reach ability. It sends datagram from B to A that echoes back to B. it uses ICMP echo request and echo reply messages. Internet layer includes code to reply to incoming ICMP echo request messages.

Q5 - How does host join and leave a group? **(3 Marks)**

Answer: - (Page 142)

A standard protocol exists that allows a host to inform a nearby router whenever the host needs to join or leave a particular multicast group known as Internet Group Multicast Protocol (IGMP). The computer uses IGMP to inform the local router about the last application when it leaves.

Q6- When packet lost what is the procedure TCP adopt? **(3 Marks)**

Answer: - Click here for detail

When a retransmitted TCP packet is lost (i.e., retransmission fails) most implementations do not have a mechanism to recover the packet without waiting for a retransmission time out and subsequent Slow Start. packet is lost for any reason, TCP adopts a sliding window approach, that is the sender keeps sending a few other packets even if it has not received the ACK for
the missing packet, in case the lost packet will arrive out of order

Q7- In this subnet blocks 192.168.1.0/26 What is the range of assignable host address? **(3 Marks)**

Q8 - Write the difference between Explicit and implicit frame type. **(3 Marks)**

Answer: - (Page 35)

In EXPLICIT FRAME TYPE the identifying value is included with frame describes types of included data while in implicit frame the receiver must infer from frame data.

Q9 - Give the concept of zero compression regarding IPV6. **(2 Marks)**

Answer: - (Page 114)

Zero-compression – series of zeroes indicated by two colons
FF0C: 0:0:0:0:0:0:B1
FF0C::B1

Q10 - Which technique is used for insertion and deletion in routing table. **(2 Marks)**

Answer: -

The search, insertion, and deletion operations can be finished in O(log N) time, where N is the number of prefixes in a routing table.

Q11- Can multiple IP addresses assigned or not on different interfaces of a router. **(2 Marks)**

Answer: - Click here for detail

You cannot have two different IP addresses from the same network assigned to the router.

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Q12- In which process backward compatibility of 100-base- T is done? **(2 Marks)**
Answer: (Page 47)
100Base-T technology is backward compatible and allows the participants to negotiate a speed when connection is established. This process is known as auto negotiation

Q13- Does OSPF only share information with an area or does it allow communication between different areas? **(2 Marks)**
Answer:- (Page 141)
OSPF allows subdivision of Autonomous System into areas. The link-status information is propagated within an area. The routes are summarized before being propagated to another area.

What is the role of area in open shortest path first (OSPF)? **(5 Marks)**
Answer:- (Page 141)
OSPF allows subdivision of Autonomous System into areas. The link-status information is propagated within an area. The routes are summarized before being propagated to another area. It reduces overhead (less broadcast traffic). Because it allows a manager to partition the routers and networks in an autonomous system into multiple areas, OSPF can scale to handle a larger number of routers than other IGPs.

Compare IPv6 with IPv4. **(5 Marks)**
Answer: click here for detail

IPV4	IPV6
32 bits long (4 bytes).	128 bits long (16 bytes)
Unicast, multicast, and broadcast.	Unicast, multicast, and anycast.
You must configure a newly installed system before it can communicate with other systems	Configuration is optional, depending on functions required.
Variable length of 20-60 bytes, depending on IP options present.	Fixed length of 40 bytes. There are no IP header options
iSeries Navigator provides a complete configuration solution for TCP/IP.	Same for IPV6
RIP is a routing protocol supported by the routed daemon.	Currently, RIP does not support IPv6. IPv6 routing uses static routes.

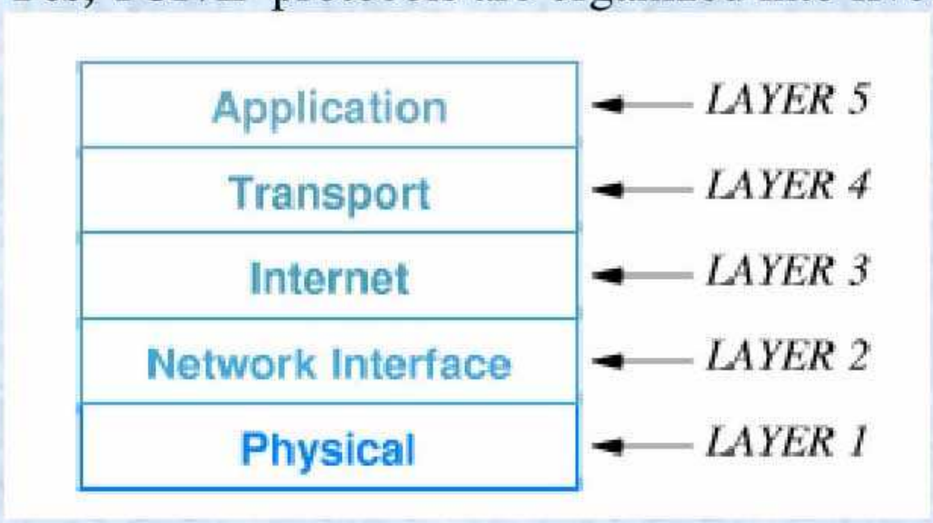
Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Transit routing. **(3 Marks)**
Answer: Click here for detail

A **routing transit number (RTN)** is a nine digit bank code, This code was designed to facilitate the sorting, bundling, and shipment of paper checks back to the drawer's (check writer's) account.

Are TCP/IP protocols organized into conceptual layers?
Answer:- (Page 83)
Yes, TCP/IP protocols are organized into five conceptual layers.



What is the size of the datagram header? **(3 Marks)**
Answer: (Page 102)

Datagram's can have different sizes i.e.

Header area is usually fixed (20 octets) but can have options. Data area can contain between 1 octet and 65.535 octets (216-1). Usually, data area is much larger than header

Can the length of an Ethernet be increased by adding a repeater? **(3 Marks)**
Answer: (Page 49)

One repeater doubles, two repeaters triple the maximum cable length limitation. It is to be noted that we cannot increase the maximum cable length as many times as we wish by just adding repeaters.

What is meant by client and server? **(2 Marks)**
Answer:- (Page 145)
It is used by all network applications. The passive program is called a server and the active program is called a client.

Zero comparison regarding IPv6. **(2 Marks)**
Answer:- rep

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

1) Is bridge is intelligent? **(2 Marks)**

Answer:-

Yes, bridge is intelligent.

2) What is meant by Zero Compression in IPv6? **(2 Marks)**

Answer:- (Page 114)

Zero-compression – series of zeroes indicated by two colons
FF0C: 0:0:0:0:0:0:B1
FF0C::B1
IPv6 address with 96 leading zeros is interpreted to hold an IPv4 address.

3) Why three-way handshake technique is used by TCP? **(3 Marks)**

Answer:- (Page 127)

Part of the 3-way handshake used to create a connection, requires each end to generate a random 32-bit sequence number. If an application attempts to establish a new TCP connection after a computer reboots, TCP chooses a new random number.

4) IS TCP/IP suit include ARP. What kind of messages are in ARP. **(3 Marks)**

Answer:- rep

5) Traceroute continues to increment the Time To Live until the value is large enough for the datagram to reach its final destination. What happens when the TTL is sufficiently large for the datagram to reach its destination? 3 marks

Answer:- rep

6) Why we need server? **(3 Marks)**

Answer:- (Page 146)

- "It can handle multiple remote clients simultaneously.
- "It invoked automatically when system boots.
- "It executes forever.
- "It needs powerful computer and operating system.
- "It waits for client contact.
- "It accepts requests from arbitrary clients.

7) Difference b/w PIM-SM and PIM-DM **(5 Marks)**

Answer:- (Page 144)

PROTOCOL INDEPENDENT MULTICAST_ *SPARSE MODE (PIM-SM):*

This is a protocol that uses the same approach as CBT to form a multicast routing tree. The designers chose the term protocol independent to emphasize that although unicast datagrams are used to contact remote destinations when establishing multicast forwarding. PIM-SM does not depend on any particular unicast routing protocol.

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari

PROTOCOL INDEPENDENT MULTICAST _ *DENSE MODE (PIM-DM):*

A protocol designed for use within an organization. Routers that use PIM-DM broadcast (i.e. flood) multicast packets to all locations within the organization. Each router that has no member of a particular group sends back a message to prune the multicast routing tree ((i.e., a request to stop the flow of packets). The scheme works well for short-lived multicast sessions (e.g., a few minutes) because it does not require setup before transmission begins.

8) Describe NAT using at Home. **(5 Marks)**

Answer:- (Page 132)

NAT is useful at a residence with Cable Modem or DSL connectivity as it allows the customer to have multiple computers at home without requiring an IP address for each of them. Instead a single IP address is used for all the computers. NAT software allows a PC to connect with the Internet and act as a NAT device at the same time. It is shown in the figure below where multiple computers are connected to the dedicated hardware device implementing NAT.

Muhammad Moaaz Siddiq MCS (3rd)
mc100401285@Gmail.com
Campus:- Institute of E-Learning & Modern Studies
(IEMS) Samundari