**Q I: MCQ MARKS**

**1. Transmission media are usually categorized as \_\_\_\_\_\_\_\_\_\_\_\_\_.**

**a) fixed or unfixed**

**b) guided or unguided**

**c) determinate or indeterminate**

**d) metallic or nonmetallic**

**2. Transmission media lies below \_\_\_\_\_\_\_\_\_\_\_ layer.**

**a) physical**

**b) network**

**c) transport**

**d) application**

**3. For twisted pair cables, which of the following value 􀁒􀁉􀀃􀂳􀀧􀁌􀁄􀁐􀁈􀁗􀁈􀁕􀂴 will**

**result in lowest attenuation?**

**a) .023**

**b) .015**

**c) .040**

**d) .020**

**4. Communication at the data-link layer is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**a) end-to-end**

**b) node-to-node**

**c) process-to-process**

**d) None of the choices are correct**

**5. An ARP reply is normally \_\_\_\_\_\_\_.**

**a) broadcast**

**b) multicast**

**c) unicast**

**d) None of the choices are correct**

**6. If an Ethernet destination address is 07:01:02:03:04:05, then this is a**

**\_\_\_\_\_\_address**

**a) Unicast**

**b) Broadcast**

**c) Multicast**

**d) None of the above**

**7. Walsh tables are used in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**a) FDMA**

**b) TDMA**

**c) CDMA**

**d) None of the choices are correct**

**8. The \_\_\_\_\_\_sublayer is responsible for the operation of the CSMA/CD**

**access method and framing.**

**a) LLC**

**b) MII**

**c) MAC**

**d) None of the above**

**9. In the Ethernet frame, the \_\_\_\_\_\_\_field contains error detection**

**information.**

**a) CRC**

**b) Preamble**

**c) Address**

**d) SFD**

**10. The specification for a wireless LAN which covers the physical layer**

**and data link layer defined by IEEE is called \_\_\_\_\_\_\_\_\_\_\_\_**

**a) IEEE 802.11**

**b) IEEE802.5**

**c) IEEE 802.2**

**d) IEEE 802.3**

**11 Gigabit Ethernet has a data rate of \_\_\_\_\_\_\_\_\_\_\_\_ Mbps.**

**a) 10**

**b) 100**

**c) 1000**

**d) 10000**

**12. The BGP routing algorithm is based on \_\_\_\_\_\_\_ algorithm**

**a) distance-vector**

**b) link-state**

**c) path-vector**

**d) link-path-state**

**13. Bluetooth is a \_\_\_\_\_technology that connect devices in a small area**

**a) Wired LAN**

**b) VLAN**

**c) Wireless LAN**

**d) None of the above**

**14. Which of the following are a network-layer protocol?**

**a) IP**

**b) ICMP**

**c) IGMP**

**d) all of the above**

**15. Stream Control Transmission Protocol (SCTP) is a new \_\_\_\_\_\_\_\_\_**

**protocol.**

**a) Reliable, character-oriented**

**b) Reliable, message-oriented**

**c) Unreliable, message-oriented**

**d) None of the choice are correct**

**16. Communication at the transport layer is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**a) Node to node**

**b) End to end**

**c) Node to host**

**d) Host to node**

**17. UDP packets are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**a) User datagram**

**b) Segments**

**c) Frames**

**d) None of the choice are correct**

**18. The OSPF routing algorithm is based on \_\_\_\_\_\_\_ algorithm**

**a) distance-vector**

**b) link-state**

**c) path-vector**

**d) link-path-state**

**19. An HTTP request message always contains \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**a) A header line and a body**

**b) A request line and a header line**

**c) A request line, a header line and a body**

**d) A request line, a header line, a blank line and a body**

**20. SMTP stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**a) Simple mail transfer protocol**

**b) Simple mail transport protocol**

**c) Similar mail transfer protocol**

**d) Similar mail transport protocol**

**Q II Fill in the Blanks**

**(Push) (TCP) (Spanning-tree) (IEEE 802.11) (Medium or Channel) (Routers) (Twelve or 12) (Two or 2) (Application) (FSK) (ACL) (Broadcast) (Wireless Networks) (Physical- layer) (Unicast) (Multicast) (Random Access Protocol) (BNC) (Point to point) (Access point or (AP)) (CRC)**

1. In the Ethernet frame, the \_\_\_\_\_\_ field includes error detection information.

(CRC)

2. A basic service set (BSS) is made of stationary or mobile wireless stations and an optional central base station, known as the \_\_\_\_\_\_access point (AP).

3. In a \_\_\_\_\_ link, the link is not shared between devices. (point to point)

4. Data Link Layer of a broadcast link has \_\_\_\_\_\_sublayers. (Two or 2)

5. Data link layer controls how the \_\_\_\_\_\_\_\_\_\_\_\_ is accessed. (Medium or

Channel)

6. A MAC address consists of \_\_\_\_\_\_\_\_\_\_\_\_\_ hexadecimal digits separated by colons. (Twelve or 12)

7. In a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_no user has priority over the other. (Random Access Protocol)

8. In Bluetooth, the \_\_\_\_\_\_\_\_\_\_link is used when data integrity is more important than avoiding latency. (ACL)

9. IEEE has defined the specifications for a wireless LAN, called\_\_\_\_\_\_\_\_, which covers the physical and DLL. (IEEE 802.11)

10. Looping problems in a set of switches can be eliminated using \_\_\_\_\_\_\_\_algorithm. (Spanning-tree)

11. CSMA/CA is a preferable method for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (Wireless Networks)

12. DHCP is a/an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-layer protocol. (Application)

13. Packet switches that are used in the network are called \_\_\_\_\_\_\_\_\_\_. (Routers)

14. SMTP is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ protocol. (Push)

15. HTTP uses the services of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. (TCP)

**Q. III TRUE and FALSE MARKS [15X0.5= 7.5]**

1 In a twisted pair cable, one wire carries the signal to the receiver and another wire carries the signal back to receiver. False

2. Data link layer for a broadcast link contains two sub layers. True

3. In a connection-oriented service there is a relationship between all packets belonging to a message. True

4. There is no minimum size of the IPv4 header. False

5. A repeater is a connecting device that operates in the physical layer. True

6 In IEEE 802.11, a BSS without an AP is called an ad hoc architecture. True

7. A client program normally uses an ephemeral port number and a server program normally uses a well-known port number. True

8. The control information in SCTP is carried in the control chunks. True

9. A router is a connecting device that operates in the network layer. False

10. SC and TP are two types of connectors used in fiber-optic cabling. True

11 In point to point link, the link is shared between many devices. False

12. Protocol layering enables us to divide a complex task into several smaller and simpler tasks. True

13. Transmission media belongs to layer '0' of OSI-TCP/IP model. True

14. Bidirectional communication makes each layer able to perform two opposite tasks. True

15. Virtual local area network (VLAN) is a local area network configured by software, not by physical wiring. True

**Q. IV Short Questions.**

1. **Write a short note about connecting devices.**

**Answer:**

Hosts and networks do not normally operate in isolation. We use connecting devices to connect hosts together to make a network or to connect networks together to make an internet. Connecting devices can operate in different layers of the Internet model. Three kinds of connecting

devices: hubs, link-layer switches, and routers.

A hub is a device that operates only in the physical layer. A repeater receives a signal and, before it becomes too weak or corrupted, regenerates and retimes the original bit pattern.

A link-layer switch (or switch) operates in both the physical and the datalink layers.

A router is a three-layer device; it operates in the physical, data-link, and network layers.

**2. Differentiate Piconet and Scatternet?**

**Answer:**

A piconet is the smallest ad hoc network. It is made of one primary (master) station and up to seven secondary (slave) stations.

A Scatternet is a larger ad hoc network made by gluing two or more piconet using one of the secondary stations in one piconet to act as the primary station in another piconet

**3. Describe the GIGABIT Ethernet.**

**Answer:**

The need for an even higher data rate resulted in the design of the Gigabit Ethernet Protocol (1000 Mbps). The IEEE committee calls it the Standard 802.3z. The goals of the Gigabit Ethernet were to upgrade the data rate to 1Gbps.

A main consideration in the evolution of Ethernet was to keep the MAC sublayer untouched. However, to achieve a data rate of 1Gbps, this was no longer possible. Gigabit Ethernet has two distinctive approaches for medium access: half-duplex and full-duplex. Almost all implementations of Gigabit Ethernet follow the full-duplex approach. The physical layer in Gigabit Ethernet is more complicated than that in Standard or Fast Ethernet.

**4. Mention the three reasons why CSMA/CD does not work in wireless LANS?**

**Answer:**

Wireless hosts do not have enough power to send and receive at the same time

The hidden station problem prevents collision detection

The distance between stations can be great.

**5. Explain the use of cladding in fiber-optic?**

**Answer:**

Optical fibers use reflection to guide light through a channel. A glass or plastic core is surrounded by a cladding of less dense glass or plastic. The difference in density of the two materials must be such that a beam of light moving through the core is reflected off the cladding instead of being refracted into it.

**Q. V Long Question. MARKS [2X5=10]**

**1. Discuss about the Virtual LAN with the membership and configuration.**

**Answer:**

We can roughly define a virtual local area network (VLAN) as a local area network configured by software, not by physical wiring. A station is considered part of a LAN if it physically belongs to that LAN. Different characteristic can be used to group stations in a VLAN. Vendors use characteristics such as interface numbers, port numbers, MAC addresses, IP addresses, IP multicast addresses, or a combination of two or more of these.

The stations grouped into different VLANs and stations are configured in one of three ways: manually, semi-automatically, and automatically. In a multi-switched backbone, each switch must know not only which station belongs to which VLAN, but also the membership of stations connected to other switches. For example switch A must know the membership status of stations connected to switch B, and switch B must know the same about switch A. Three methods have been devised for this purpose: table maintenance, frame tagging, and time-division multiplexing.

**2 Explain the terms**

(i) HTTP

(ii) FTP

**Answer:**

(i) The HyperText Transfer Protocol (HTTP) is used to define how the client-server programs can be written to retrieve web pages from the Web. An HTTP client sends a request; an HTTP server returns a response. The server uses the port number 80; the client uses a temporary port number. HTTP uses the services of TCP, which, as discussed before, is a connection-oriented and reliable protocol.

(ii) File Transfer Protocol (FTP) is the standard protocol provided by TCP/IP for copying a file from one host to another. Although transferring files from one system to another seems simple and straightforward, some problems must be dealt with first.