

# **SOLVED BY ADIL ALVI**

## **CS601 CURRENT PAPERS FALL 2021**

### **1) What is CSMA/CA?**

To minimize the chance of collision and, therefore, increase the performance, CSMA was developed. CSMA/CA was invented for Wireless Networks

### **2) Primary station and secondary station/Polling:**

Polling works with topologies in which one device is designated as a primary station and the other devices are secondary stations. All data exchanges must be made through primary device even when the ultimate destination is a secondary device

### **3) In which layer switch and hub are works?**

A link-layer switch (or switch) operates in both the physical and the data-link layers  
Hub is a device that operates only in the physical layer

### **4) How many types of HDLC frames?**

HDLC defines three types of frames: 1) information frames (I-frames), 2) Supervisory frames (S-frames), 3) Unnumbered frames (U-frames)

### **5) Write specification of IEEE 802.11 PROJECT?**

IEEE has defined the specifications for a wireless LAN, called IEEE 802.11, which covers the physical and data-link layers. It is sometimes called Wireless Ethernet

### **6) Write the difference between error correction and error detection?**

In error detection, we are only looking to see if any error has occurred (Yes or No). We are not interested in the number of corrupted bits in Detection. Single-bit error is same as a Burst error. In Error Correction, we need to know the exact number of bits that are corrupted and, their location in the message

### **7) How many Types of frames?**

Management Frames, Control Frames, Data Frames

### **8) How many types of telephone network?**

There are three main types of telephone connections, each supported by different technologies. These are: Analogue telephone connections. Integrated Services Digital Network (ISDN) telephone connections.

### **9) Write three controlled-access methods?**

Three controlled-access methods: 1) Reservation, 2) Polling, 3) Token Passing

### **10) In which layer of OSI model hub and switches falls?**

In Layer1 of OSI model hub and switch fall

### **11) Write Carriers of LATA?**

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Carrier that handles Intra-LATA are called a Local Exchange Carrier (LEC) and the ones that handle Inter-LATA are called Interexchange Carriers (IXCs)

## 12) What is Attenuation? Write name of Attenuation characteristics and its Unit?

Attenuation means a loss of energy. When a signal, simple or composite, travels through a medium, it loses some of its energy in overcoming the resistance of the medium.

Unit of Attenuation is Decibel or dB and this is Characteristics of a Wireless LAN

## 13) SONET correspond to physical and data link layer. Write three specific layers correspond to data link layer?

SONET Layers: SONET defines 4 layers, namely photonic layer, Section layer, Line layer and Path layer. The photonic layer is the lowest and performs the physical layer activities while all other 3 layers correspond to Data link layer of OSI model.

## 14) Identify that which belong to random-access protocol/controlled access?

ALOHA	RANDOM ACCESS
POLLING	CONTROLLED ACCESS
RESERVATION	CONTROLLED ACCESS
CSMA/CD	RANDOM ACCESS
CSMA/CA	RANDOM ACCESS

## 15) ALOHA is a multiple access protocol for transmission of data via a shared network channel. Considering this given below is a table of the terms used in pure ALOHA, you are required to mention the complete names of the respective terms/legends?

Terms/Legends	Names
K	Number of attempts
$T_{FR}$	Maximum propagation time
$T_p$	Average transmission time
R	(Back-off time) $R \times T_p$ or $R \times T_{fr}$
$T_B$	(random number): $0$ to $2^k - 1$

## 16) Following table contains the list of connecting devices in a computer network you are required to mention the names of Open System Interconnection Model (OSI) layers on which these devices do operate?

Connecting Device	OSI Layer
Hub	Physical Layer
Switch	Data-link Layer
Router	Network Layer

## 17) Consider two stations i.e. primary and secondary. Primary station can send commands while secondary station only responds. Identify the transfer mode of high level data link control (HDLC) in this case?

**Normal Response Mode (NRM)** – Here, two types of stations are there, a primary station that send commands and secondary station that can respond to received commands. It is used for both point - to - point and multipoint communications.

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## 18) What Loop Problem in a Switch?

Redundant switches create Loops in the system. Created when two or more broadcasting LANs are connected by more than one switch

## 19) Write two names of layers of IEEE project 802?

A way of specifying functions of the physical layer and the data-link layer of major LAN protocols and also split the data link layer into two different layers -- an LLC layer and a MAC layer.

## 20) Write Characteristics of a Wireless LAN?

Several characteristics of wireless LANs either do not apply to wired LANs or the existence of these is negligible and can be ignored 1) Attenuation, 2) Interference, 3) Multipath Propagation, 4) Error

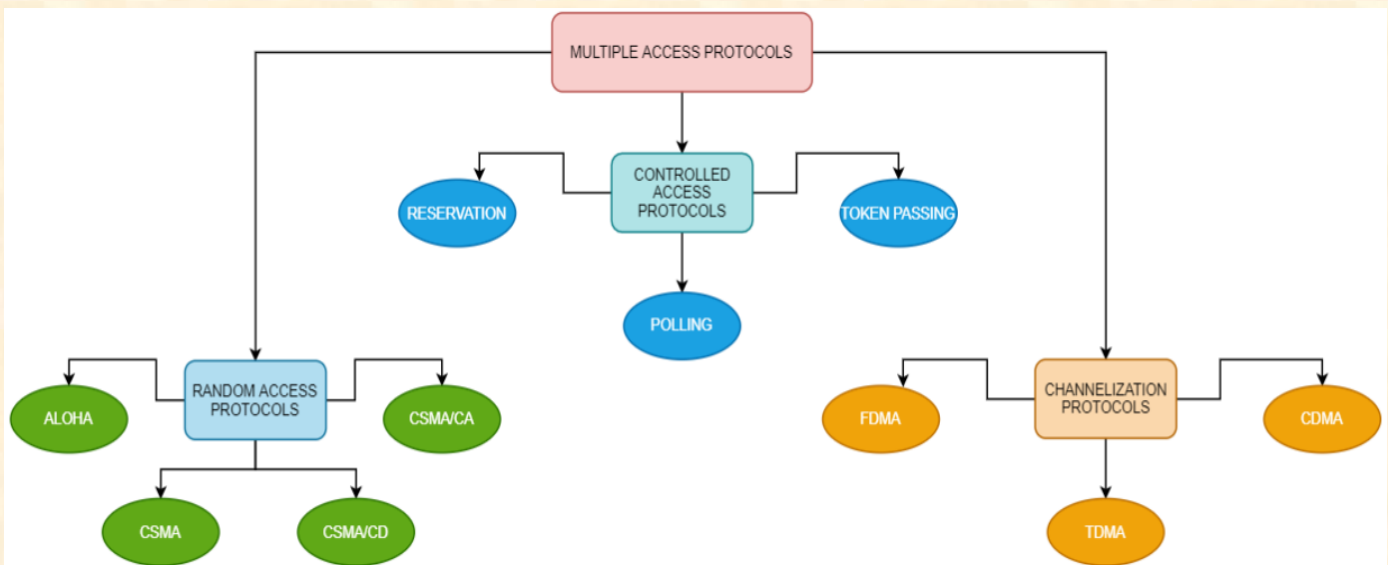
## 21) Mention the maximum speed of following Ethernet technologies?

1) Standard Ethernet, 2) Fast Ethernet

A standard Ethernet network can transmit data at a rate up to 10 Megabits per second (10 Mbps).

A Fast Ethernet network can transmit data at a rate up to 100 Megabits per second (100 Mbps).

## 22) Write types and subtypes of Multiple Access Protocol?



23) Cable network uses two distinguished components i.e. CM and CMTS. You are required to mention the complete names for CM and CMTS. Also mention the places where these devices are used?

### 1) Cable Modem (CM):

Cable modem, modem used to convert analog data signals to digital form and vice versa, for transmission or receipt over cable television lines, especially for connecting to the Internet.

### 2) Cable Modem Transmission System (CMTS):

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CMTS is used to provide high speed data services, such as cable Internet or Voice over Internet Protocol, to cable subscribers.

## 24) Abbreviation of ALOHA?

Additive Links On-line Hawaii Area.

## 25) Formula of calculating standard Ethernet efficiency?

The practical efficiency of standard Ethernet has been measured to be  $\text{Efficiency} = 1 / (1 + 6.4 \times a)$  where  $a$  = number of frames that can fit on a medium

## 26) Write telephone switching offices names?

The telephone network has several levels of switching offices:

1) End offices, 2) Tandem offices, 3) Regional offices

## 27) What is VLAN/Physical LAN/Software?

A VLAN is a LAN configured by software, not by physical wiring. Provides a virtual connection between two stations belonging to two different physical LANs

## 28) Define DSL/data rate?

After traditional dialup modems reached their peak data rate, telephone companies developed another technology, DSL, to provide higher-speed access to the Internet. DSL supports high speed digital communication over the existing telephone. DSL technology is a set of technologies, each differing in the first letter (ADSL, VDSL, HDSL, and SDSL)

## 29) What is Parity-Check Code?

Most common error detecting Code, Linear block code ( $n=k+1$ ), the extra parity bit is selected to make total number of 1s in code word even

## 30) What is Variable – Sized Framing write its two types?

Here, the size of each frame to be transmitted may be different. So additional mechanisms are kept to mark the end of one frame and the beginning of the next frame. It is used in local area networks.

**Variable – Sized Framing two types:**

1) Character Oriented Framing 2) Bit Oriented Framing

## 31) If machine a send data to machine b. in which protocol of data link layer a will not send any data until it receive acknowledgment from machine b? What protocol is this?

**Stop-and-Wait Protocol:** The sender sends one frame at a time and waits for an acknowledgment before sending the next one

## 32) How many Types of Ethernet?

1) Standard Ethernet (10Mbps), 2) Fast Ethernet (100Mbps), 3) Gigabit Ethernet (1Gbps), 4) 10 Gigabit Ethernet (10Gbps)

## 33) Write technique of 10base5 and 10base2 implementation?

10base5 (10mbps baseband 500m) uses thick coaxial cable maximum 500m

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10base2 (10mbps baseband 185m) uses thin coaxial cable maximum 185m

## 34) Name of device which use to regenerate the signals in data communication?

A repeater is a network device used to regenerate a signal. Repeaters regenerate analog or digital signals that are distorted by transmission loss due to attenuation.

## 35) Write sublayer of data link layer?

We can divide the datalink layer into two sublayers: 1) Data Link Control (DLC), 2) Media Access Control (MAC)

## 36) Write Sublayer of media access control?

IEEE 802.11 defines two MAC sub-layers:

1) The Distributed Coordination Function (DCF), 2) The Point Coordination Function (PCF)

## 37) Write three protocols of channelization?

1) Frequency Division Multiple Access (FDMA), 2) Time Division multiple Access (TDMA), 3) Code Division Multiple Access (CDMA)

## 38) Propagation delay time formula?

Propagation delay is equal to  $d / s$  where  $d$  is the distance and  $s$  is the wave propagation speed. In wireless communication,  $s=c$ , i.e. the speed of light.

## 39) Transmission delay time formula?

1) Packet transmission time = Packet size / Bit rate.

2) Packet delivery time = Transmission time + Propagation delay.

## 40) Data Representation in CDMA?

Data bit 0	-1
Data bit 1	+1
Silence	0

## 41) How many primary stations and secondary stations in Piconet network?

In Piconet network there are 1 primary station and four secondary stations

## 42) 1-Persistent Method?

The standard Ethernet chose CSMA/CD with 1-Persistent Method

## 43) How many types of Address Resolution Protocol?

There are four types of Address Resolution Protocol, which is given below:

1) Proxy ARP, 2) Gratuitous ARP, 3) Reverse ARP (RARP), 4) Inverse ARP

## 44) What is unnumbered frame (U-frame)?

U-frame stands for unnumbered frames. These frames are also required in various functions like link setup and disconnections. These frames basically support control purposes and are not sequenced.

## 45) How many types of multiple access protocols?

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Multiple access protocols can be broadly classified into three categories - random access protocols, controlled access protocols and channelization protocols

## 46) What is Data-Link layer (DLL)?

Data-Link layer provides services to Network Layer and receives services from Physical layer

1) Framing, 2) Flow Control, 3) Error Control, 4) Congestion Control

## 47) What is hybrid cable network?

Hybrid fiber-coaxial (HFC) is a telecommunications industry term for a broadband network that combines optical fiber and coaxial cable.

## 48) Write characteristics of signals?

1) Signal Amplitude, 2) Frequency Facts, 3) Wavelength Information, 4) Signal Phase.

## 49) Write 7 types of OSI layer?

In the OSI reference model, the communications between a computing systems are split into seven different abstraction layers: Physical, Data Link, Network, Transport, Session, Presentation, and Application.

## 50) Write Intra-LATA and Inter-LATA Services?

Services offered by Telephone companies inside a LATA are called Intra-LATA services and between LATAs are called Inter-LATA services

## 51) Software is installed to configure these two station?

In modern networks, a host can act as a client, a server, or both. Software installed on the host determines which role it plays on the network. Servers are hosts that have software installed that enables them to provide information and services, like email or web pages, to other hosts on the network.

52) suppose in standard Ethernet a frame of 512 bits is needed to be transmitted on speed of 10Mbps where the length of a cable is 50m and the propagation speed of the signal in the cable is  $2 \times 10^8$  m/s by writing necessary formula and calculation step you are required to calculate the transmission delay in proper unit?

$$D_t = \frac{L}{R}$$

L is the length of packet (in bits) which is to be transmitted

R is the Transmission rate

$L = 512$  bits (if these are bytes then first convert it in bits as:  $512 \times 8 = 4096$ )

$R = 10 \text{ Mbps}$

$R = 10 \times 10^6$

$$D_t = \frac{512}{10 \times 10^6}$$

$$D_t = \frac{512}{1,000,000}$$

$$D_t = 0.0000512 \text{ s}$$

$$D_t = 0.0512 \times 10^{-3} \text{ s}$$

$$D_t = 0.0512 \text{ ms} \quad (\text{milli sec} = \text{ms} \quad \therefore \text{milli} = 10^{-3})$$

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## CS601 Practical Questions:

- 1) Minimum hamming distance calculate karna tha.
- 3) Simple hamming distance find krna tha
- 4) Transmission delay find krna tha numerical question tha
- 5) dmin ka numerical tha
- 7) Find the measurement of proefficiency from standard ethernet.
- 8) Bit btany thy 5 equation thi unky
- 9) Calculate impacted bit. 2kps data speed, tim 1/100 second
- 10) Numerical time pragation
- 13) Hamming distance ka formula use krna 9 bits py 5 marks ka
- 14) Numerical tha jis me data rate ki value di hoi ti or implemented/effected bit find krne they
- 15) 5 marks ka table tha jis ma even parity bit check krni the
- 16) dmin given tha error btaany thy 3 marks
- 17) long mai aik propagation speed wala aya
- 18) 5 bits of data word given thi or un me even parity bit chk krni thi...
- 19) Find silence in given cdma data
- 20) in given scenario teacher is primary, who calls roll no of every student. students are secondary station. every student only respond to its roll call . what type of protocol is this ?
- 21) Even parity check code batana tha
- 22) Code word ka even code word table fill krna tha parity bite likhne thy.
- 23) Long tha dataword ko parity bit me change krna tha
- 24) 1 numerical aya tha jis mein transmission delay find karna tha
- 25) 1 numerical tha 2mbps hay 1/100 kbps main value the hoi the usko number of bits required main concert karna tha

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