

# CS601 MCQS'S FILE ARRANGED

BY *Amir Khan*

## CS601-Data Communication MIDTERM EXAMINATION Spring 2010

**Question No: 1 ( Marks: 1 ) - Please choose one**  
**Effective network mean that the network has fast delivery, timeliness and**

- ☐ high bandwidth
- ☐ duplex transmission
- ☒ **accurate transmission (P6)**
- ☐ low bandwidth

**Question No: 2 ( Marks: 1 ) - Please choose**  
**A set of devices connected by communication links is called networking**

- ☒ **True (P12)**
- ☐ False

**Question No: 3 ( Marks: 1 ) - Please choose one**  
**Which one best describes the given statement:**  
**"To allow multiple users to share total capacity of a transmission medium"**

- ☐ congestion control
- ☐ exchange management
- ☒ **multiplexing (P17)**

**Question No: 4 ( Marks: 1 ) - Please choose one**  
**Line configuration refers to the way two or more devices attach to a .**

- ☒ **Link (P25)**

- ☐ Circuit
- ☐ Route
- ☐ Node

**Question No: 5 ( Marks: 1 ) - Please choose one requires the maximum number of I/O ports.**

- ☐ Bus
- ☐ Star

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☒ **Mesh (P29)**

- ☐ Ring

**Question No: 6 ( Marks: 1 ) - Please choose one is used to define the direction of the signal flow between the linked devices.**

☒ **transmission mode (P34)**

- ☐ transmission method
- ☐ transmission impairments

**Question No: 7 ( Marks: 1 ) - Please choose one Unidirectional traffic movement is overcome by dual ring technology.**

☒ **True (P33)**

- ☐ False

**Question No: 8 ( Marks: 1 ) - Please choose one Trailer is only added at layer of OSI model.**

☒ **Data link (P41)**

- ☐ Physical
- ☐ Network
- ☐ Application

**Question No: 9 ( Marks: 1 ) - Please choose one**

**Data link layer deals with mechanical and electrical specifications of transmission medium and Interface**

☒ **True (P44)**

☐ False

**Question No: 10 ( Marks: 1 ) - Please choose one**

**A signal that repeats a pattern over a regular interval of time is called .**

☒ **periodic signal (P58)**

☐ analog signal

☐ composite signal

**Question No: 11 ( Marks: 1 ) - Please choose one**

**If there is in voltage then the frequency is infinite.**

☐ instantaneous change

☒ **continuous change (P61)**

☐ no change

**Question No: 12 ( Marks: 1 ) - Please choose one**

**In a time-domain plot, the horizontal axis is measure of .**

☐ signal amplitude

☐ frequency

☐ phase

☒ **time (P63)**

**Question No: 13 ( Marks: 1 ) - Please choose**

**DC component is also termed as Direct current component or a component with non-zero frequency.**

☒ **False (P72)**

☐ True

**Question No: 14 ( Marks: 1 ) - Please choose one**

**Quantization means measuring amplitudes of signal at equal intervals.**

☐ True

☒ **False (P80)**

**Question No: 15 ( Marks: 1 ) - Please choose one**  
**Amplitude in ASK is more resistive to EMI and Noise.**

☒ **True (P87)**

☐ False

**Question No: 16 ( Marks: 1 ) - Please choose one**  
**ASK, PSK, FSK and QAM are examples of modulation.**

☐ digital-to-digital

☒ **digital-to-analog (P85)**

☐ analog-to-analog

☐ analog-to-digital

**Question No: 17 ( Marks: 1 ) - Please choose one**  
**The bit rate always equals the baud rate in which type of signal?**

☒ **FSK (P86)**

☐ QAM

☐ 4-PSK

☐ PSK

**Question No: 18 ( Marks: 1 ) - Please choose one**  
**Asynchronous transmission is**

☒ **Slow (P99)**

☐ costly

☐ non-effective

☐ fast

**Question No: 19 ( Marks: 1 ) - Please choose one**  
**A converts an analog signal into a digital signal.**

☒ **Demodulator (P110)**

☐ Modulator

☐ Digital-to-analog converter

**Question No: 20 ( Marks: 1 ) - Please choose one**

If a station does not receive its signal up to a specified time that system issues an alarm to

Ø another node (P188)

Ø network manager

Ø switch

Ø network analyzer

## MIDTERM EXAMINATION

### Spring 2010

**Question No: 1 ( Marks: 1 ) - Please choose one**

The information to be communicated in a data communications system is the

▶ Medium

▶ Protocol

▶ **Message (P 7)**

▶ Transmission

**Question No: 2 ( Marks: 1 ) - Please choose one**

Which is not an element of protocol

▶ semantics

▶ timing

▶ **communication service module (P19)**

**Question No: 3 ( Marks: 1 ) - Please choose one**

Line configuration refers to the way two or more devices attach to a \_\_\_\_\_.

▶ **Link (P 25)**

▶ Circuit

▶ Route

▶ Node

**Question No: 4 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ requires the maximum number of I/O ports.

▶ Bus

▶ Star

► **Mesh (P29)**

► Ring

**Question No: 5 ( Marks: 1 ) - Please choose one**

Which topology requires a central controller or hub?

► Mesh

► **Star (P 30)**

► Bus

► Ring

**Question No: 6 ( Marks: 1 ) - Please choose one**

Layers 5, 6 and 7 also called as network support layers.

► True

► **False (P 42)**

**Question No: 7 ( Marks: 1 ) - Please choose one**

Internet with small "i" specifies the world wide Network the actual internet.

► True

► **False (P 39)**

**Question No: 8 ( Marks: 1 ) - Please choose one**

Data link layer deals with mechanical and electrical specifications of transmission medium and interface

► **True (P 44)**

► False

**Question No: 9 ( Marks: 1 ) - Please choose one**

Data synchronization is a function related with \_\_\_\_\_

► **session layer (P 51)**

► presentation layer

► transport

**Question No: 10 ( Marks: 1 ) - Please choose one**

OSI model was developed prior to TCP/IP model.

► **True (P 54)**

► False

**Question No: 11 ( Marks: 1 ) - Please choose one**

Fourier transform tells us that any digital signal can be decomposed into infinite number of periodic signals

► True

► **False (P58)**

**Question No: 12 ( Marks: 1 ) - Please choose one**

A signal that repeats a pattern over a regular interval of time is called\_\_\_\_\_.

► **periodic signal (P58)**

► analog signal

► composite signal

**Question No: 13 ( Marks: 1 ) - Please choose one**

Frequency band in which 99% of the total power resides is called\_\_\_\_\_

► **power bandwidth (P 67)**

► half power bandwidth

► 3dB bandwidth

► F.M.

**Question No: 14 ( Marks: 1 ) - Please choose one**

In differential Manchester we require two transition or signal changes to represent binary\_\_\_\_\_

► zero

► **one (P76)**

► both zero and one

**Question No: 15 ( Marks: 1 ) - Please choose one**

In Alternate mark inversion the term mark comes from\_\_\_\_\_

► **telegraphy (P77)**

► telephony

► digital telephony

**Question No: 16 ( Marks: 1 ) - Please choose one**

A 56k modem can download at a rate of \_\_\_\_\_ Kbps and upload at a rate of \_\_\_\_\_ Kbps.

- ▶ 33.6: 33.6
- ▶ **33.6: 56.6**
- ▶ 56.6: 33.6
- ▶ 56.6: 56.6

**Question No: 17 ( Marks: 1 ) - Please choose one**

The bit rate always equals the baud rate in which type of signal?

- ▶ **FSK (P 86)**
- ▶ QAM
- ▶ 4-PSK
- ▶ PSK

**Question No: 18 ( Marks: 1 ) - Please choose one**

Asynchronous transmission is \_\_\_\_\_

- ▶ **slow (P 99)**
- ▶ costly
- ▶ non-effective
- ▶ fast

**Question No: 19 ( Marks: 1 ) - Please choose one**

At the \_\_\_\_\_ layer, a DCE takes data generated by a DTE.

- ▶ **physical (P 101)**
- ▶ transport
- ▶ data link
- ▶ application

**Question No: 20 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ requires more bandwidth.

- ▶ FSK
- ▶ **ASK (P 112)**



- ▶ PSK
- ▶ QAM

## **MIDTERM EXAMINATION**

### **Spring 2010**

**Question No: 1 ( Marks: 1 ) - Please choose one**

Which topology requires a central controller or hub?

- ▶ Mesh
- ▶ **Star (P 30)**
- ▶ Bus
- ▶ Ring

**Question No: 2 ( Marks: 1 ) - Please choose one**

Unidirectional traffic movement is overcome by dual ring technology.

- ▶ **True (P33)**
- ▶ False

**Question No: 3 ( Marks: 1 ) - Please choose one**

Which one best describes the given statement:

"To allow multiple users to share total capacity of a transmission medium"

- ▶ congestion control
- ▶ exchange management
- ▶ **multiplexing (P17)**

**Question No: 4 ( Marks: 1 ) - Please choose one**

Which one is not among standard creation committee.

- ▶ **internet society and IETF (P 24)**
- ▶ ITU-T
- ▶ IEEE

**Question No: 5 ( Marks: 1 ) - Please choose one**

Set of rules that govern communication is called

- ▶ OSI model
- ▶ **Protocol (P 8)**

- ▶ TCP/IP model
- ▶ Datagram

**Question No: 6 ( Marks: 1 ) - Please choose one**

Frequency of a failure and network recovery time after a failure is measures of the \_\_\_\_\_ of a network.

- ▶ **Performance (P 14)**
- ▶ Reliability
- ▶ Security
- ▶ Feasibility

**Question No: 7 ( Marks: 1 ) - Please choose one**

3dB is also called as power bandwidth.

- ▶ True
- ▶ **False (P66)**

**Question No: 8 ( Marks: 1 ) - Please choose one**

ASK, PSK, FSK and QAM are examples of \_\_\_\_\_ modulation.

- ▶ digital-to-digital
- ▶ **digital-to-analog (P85)**
- ▶ analog-to-analog
- ▶ analog-to-digital

**Question No: 9 ( Marks: 1 ) - Please choose one**

Packet switching is a connection oriented service.

- ▶ True
- ▶ **False (P38)**

**Question No: 10 ( Marks: 1 ) - Please choose one**

Data synchronization is a function related with \_\_\_\_\_

- ▶ **session layer (P51)**
- ▶ presentation layer
- ▶ transport

**Question No: 11 ( Marks: 1 ) - Please choose one**

Fourier transform tells us that any digital signal can be decomposed into infinite number of periodic signals

- ▶ True
- ▶ **False (P 58)**

**Question No: 12 ( Marks: 1 ) - Please choose one**

The internet model consists of \_\_\_\_\_ layers.

- ▶ **three (P239)**
- ▶ two
- ▶ five
- ▶ seven

**Question No: 13 ( Marks: 1 ) - Please choose one**

Analog to digital conversion is also termed as modulating an analog signal.

- ▶ True
- ▶ **False (P 77)**

**Question No: 14 ( Marks: 1 ) - Please choose one**

PCM is the first process of PAM.

- ▶ True
- ▶ **False (P80)**

**Question No: 15 ( Marks: 1 ) - Please choose one**

A modulator converts a(n) \_\_\_\_\_ signal to a(n) \_\_\_\_\_ signal.

- ▶ FSK: PSK
- ▶ **Digital: analog (P 110)**
- ▶ Analog: digital
- ▶ PSK: FSK

**Question No: 16 ( Marks: 1 ) - Please choose one**

The \_\_\_\_\_ layer changes bits into electromagnetic signals.

▶ **physical**

▶ data link

▶ transport

▶ none of given

[http://www.ee.surrey.ac.uk/Projects/CAL/networks/Physical\\_Layer.htm](http://www.ee.surrey.ac.uk/Projects/CAL/networks/Physical_Layer.htm)

**Question No: 17 ( Marks: 1 ) - Please choose one**

We need \_\_\_\_\_ to decompose a composite signal into its components.

▶ **fourier transform (P 64)**

▶ nyquist theorem

▶ shannon capacity

**Question No: 18 ( Marks: 1 ) - Please choose one**

The bit rate always equals the baud rate in which type of signal?

▶ **FSK (P 86)**

▶ QAM

▶ 4-PSK

▶ PSK

**Question No: 19 ( Marks: 1 ) - Please choose one**

There are \_\_\_\_\_ possible variations of 16 QAM.

▶ five

▶ two

▶ **three (P93)**

▶ four

**Question No: 20 ( Marks: 1 ) - Please choose one**

Number of signal units per second that are required to represent a bit is called bit rate.

▶ True

▶ **False (P 68)**

**MIDTERM EXAMINATION**  
**Spring 2010**

**Please choose one ( Marks: 1 )**

**Effective network mean that the network has fast delivery, timeliness and**

- ☐ high bandwidth
- ☐ duplex transmission
- ☒ **accurate transmission (P6)**
- ☐ low bandwidth

**Question No: 2 ( Marks: 1 ) - Please choose one**

**A set of devices connected by communication links is called networking**

- ☒ **True (P12)**
- ☐ False

**Question No: 3 ( Marks: 1 ) - Please choose one**

**\_\_\_\_\_ is a multipoint topology.**

- ☐ Ring
- ☐ Mesh
- ☐ Tree
- ☒ **Bus**

**Question No: 4 ( Marks: 1 ) - Please choose one**

**\_\_\_\_\_requires the maximum number of I/O ports.**

- ☐ Bus
- ☐ Star
- ☒ **Mesh (P29)**
- ☐ Ring

**Question No: 5 ( Marks: 1 ) - Please choose one**

**Unidirectional traffic movement is overcome by dual ring technology.**

- ☒ **True (P33)**

☐ False

**Question No: 6 ( Marks: 1 ) - Please choose one**

**As the data packet moves from the lower to the upper layers, headers are**

\_\_\_\_\_.

- ☐ added
- ☒ subtracted
- ☐ rearranged
- ☐ modified

**Question No: 7 ( Marks: 1 ) - Please choose one**

**Data chunk at data link layer is called\_\_\_\_\_**

- ☐ frame
- ☒ packet (P38)
- ☐ datagram

**Question No: 8 ( Marks: 1 ) - Please choose one**

**The \_\_\_\_\_ layer is the layer closest to the transmission medium.**

- ☒ Physical (P45)
- ☐ data link
- ☐ network
- ☐ transport

**Question No: 9 ( Marks: 1 ) - Please choose one**

**Data synchronization is a function related with \_\_\_\_\_**

- ☒ session layer (P 51)
- ☐ presentation layer
- ☐ transport

**Question No: 10 ( Marks: 1 ) - Please choose one**

**Which layer is responsible for source to destination delivery of entire message?**

- ☒ transport layer (P59)

- ☐ network layer
- ☐ session layer
- ☐ application layer

**Question No: 11 ( Marks: 1 ) - Please choose one**  
**Encryption and encoding are the same terms.**

- ☐ True
- ☒ **False (P52)**

**Question No: 12 ( Marks: 1 ) - Please choose one**  
**TCP/IP model Application layer incorporate OSI Application and presentation**

- ☐ layers
- ☒ **True**
- ☐ False

**Question No: 13 ( Marks: 1 ) - Please choose one**  
**A sine wave must be an analog signal.**

- ☒ **True (P58)**
- ☐ False

**Question No: 14 ( Marks: 1 ) - Please choose one**  
**A periodic signal can always be decomposed into**

- 
- ☐ exactly an odd number of sine waves
  - ☐ a set of sine waves
  - ☐ set of sine waves, one of the which must have a phase of 00
  - ☒ **none of the given (P58)**

**Question No: 15 ( Marks: 1 ) - Please choose one**  
**Manchester is a type of \_\_\_\_\_encoding.**

- ☒ **Biphase (P75)**
- ☐ polar
- ☐ biphase & polar
- ☐ none of the given

**Question No: 16 ( Marks: 1 ) - Please choose one**

**The powerful carrier signal is called as the\_\_\_\_\_**

☒ **carrier frequency (P86)**

☐ base signal

☐ carrier frequency and base signal

☐ none of given

**Question No: 17 ( Marks: 1 ) - Please choose one**

**Modulation of an analog signal can be accomplished through changing the \_\_\_\_\_ of the carrier signal.**

☐ amplitude

☐ frequency

☐ phase

☒ **all of the given (P58)**

**Question No: 18 ( Marks: 1 ) - Please choose one**

**In \_\_\_\_\_ transmission, bits are transmitted over a single wire, one at a time.**

☐ Asynchronous serial

☐ Synchronous serial

☒ **Parallel (P99)**

☐ Asynchronous & Synchronous serial

**Question No: 19 ( Marks: 1 ) - Please choose one**

**In RS 422 Balanced mode two lines carry \_\_\_\_\_ signals which are not identical to each other.**

☒ **Same (P109)**

☐ different

☐ digital

☐ analog

**Question No: 20 ( Marks: 1 ) - Please choose one**

**A \_\_\_\_\_ converts an analog signal into a digital signal.**

☒ **Demodulator (P110)**



- Ø Modulator
- Ø Digital-to-analog converter

## **MIDTERM EXAMINATION**

### **Spring 2009**

#### **Question No: 1 ( Marks: 1 ) - Please choose one**

In RS 422 Balanced mode two lines carry signals which are not identical to each other.

▶ **same (P109)**

- ▶ different
- ▶ digital
- ▶ analog

#### **Question No: 2 ( Marks: 1 ) - Please choose one**

The generates the data and passes it along with any control information to a

▶ **DTE; DCE (P 101)**

- ▶ DCE; DTE
- ▶ DCE; node
- ▶ DTE; application

#### **Question No: 3 ( Marks: 1 ) - Please choose one**

In transmission, a start bit and a stop bit frame a character byte.

▶ **Asynchronous serial (P99)**

- ▶ Synchronous serial (P99)
- ▶ Parallel
- ▶ Asynchronous & Synchronous serial

#### **Question No: 4 ( Marks: 1 ) - Please choose one**

In transmission, bits are transmitted simultaneously, each across its own wire.

- ▶ Asynchronous serial
- ▶ Synchronous serial

- ▶ Parallel
- ▶ Asynchronous & Synchronous serial

**Question No: 5 ( Marks: 1 ) - Please choose one**

Asynchronous transmission is

- ▶ **slow (P99)**
- ▶ costly
- ▶ non-effective
- ▶ fast

**Question No: 6 ( Marks: 1 ) - Please choose one**

In transmission the timing of the signal is unimportant.

- ▶ **Asynchronous (P99)**
- ▶ Synchronous
- ▶ Polar
- ▶ Bi-polar

**Question No: 7 ( Marks: 1 ) - Please choose one**

In 8QAM each signal shift or one baud represents \_\_\_\_\_

- ▶ 4 bits
- ▶ 2 bits
- ▶ 5 bits
- ▶ **3 bits (P93)**

**Question No: 8 ( Marks: 1 ) - Please choose one**

PCM is the first process of PAM.

- ▶ True
- ▶ False

**Question No: 9 ( Marks: 1 ) - Please choose one**

Bi phase encoding is a type of bipolar encoding in which we use two voltage levels.

- ▶ **True (P73)**
- ▶ False

**Question No: 10 ( Marks: 1 ) - Please choose one**

The amplitude of a digital signal depends upon the to represent a bit.

- ▶ **phase**
- ▶ voltage
- ▶ wavelength

**Question No: 11 ( Marks: 1 ) - Please choose one**

Time domain plot show changes in signal phase with respect to time.

- ▶ True
- ▶ **False (P63)**

**Question No: 12 ( Marks: 1 ) - Please choose one**

OSI model was developed prior to TCP/IP model.

- ▶ True
- ▶ **False(P54)**

**Question No: 13 ( Marks: 1 ) - Please choose one**

layer is the layer closest to the transmission medium.

- ▶ **Physical (P45)**
- ▶ Data link
- ▶ Network
- ▶ Transport

**Question No: 14 (Marks: 1) - Please choose one**

Data chunk at data link layer is called

- ▶ frame
- ▶ **packet (P38)**
- ▶ datagram

**Question No: 15 ( Marks: 1 ) - Please choose one**

The internet model consists of layers.

- ▶ **Three (P239)**
- ▶ Two
- ▶ Five

► Seven

**Question No: 16 ( Marks: 1 ) - Please choose one**

representation of links that connect nodes is called as physical topology.

► **geometrical (P28)**

► logical

► physical

**Question No: 17 ( Marks: 1 ) - Please choose one**

is a multipoint topology.

► Ring

► Mesh

► Tree

► **Bus (P31)**

**Question No: 18 ( Marks: 1 ) - Please choose one**

In mesh topology, if there are five nodes then there will be links.

► 5

► **10(P10)**

► 15

► 20

**Question No: 19 (Marks: 1) - Please choose one**

Non proprietary standard is also termed as de facto standard.

► **True (P23)**

► False

**Question No: 20 ( Marks: 1 ) - Please choose one**

Effective network mean that the network has fast delivery, timeliness and

► high bandwidth

► duplex transmission

► **accurate transmission (P6)**

► low bandwidth

## MIDTERM EXAMINATION

Spring 2009

**Question No: 1 (Marks: 1) - Please choose one**  
**Frequency of a failure and network recovery time after a failure is measures of the \_\_\_\_\_ of a network.**

☒ **Performance (P 14)**

☐ Reliability

☐ Security

☐ Feasibility

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**Question No: 2 (Marks: 1) - Please choose one**  
**Secondary hub in a tree must be a passive hub.**

☒ **True (P31)**

☐ False

**Question No: 3 (Marks: 1) - Please choose one**  
**In mesh topology, if there are five nodes then there will be \_\_\_\_\_ links.**

☐ 5

☒ **10 (P29)**

☐ 15

☐ 20

**Question No: 4 (Marks: 1) - Please choose one**  
**Internet with small “i” specifies the world wide Network the actual internet.**

☐ True

☒ **False (P39)**

**Question No: 5 (Marks: 1) - Please choose one**  
**Data link layer deals with mechanical and electrical specifications of transmission medium and interface**

☐ True (P 44)

☐ False

**Question No: 6 (Marks: 1) - Please choose one**

**When data are transmitted from device A to device B, the header from A's layer 4 is read by B's \_\_\_\_\_ layer.**

☐ physical

☒ transport

☐ application

☐ none of the given

**Question No: 7 (Marks: 1) - Please choose one**

**Time domain plot show changes in signal phase with respect to time.**

☐ True

☒ False (63)

**Question No: 8 (Marks: 1) - Please choose one**

**Frequency band in which 99% of the total power resides is called \_\_\_\_\_**

☒ power bandwidth (P67)

☐ half power bandwidth

☐ F.M.

**Question No: 9 (Marks: 1) - Please choose one**

**The inversion of the level at 1 bit is called as \_\_\_\_\_**

☐ NRZ-L

☒ NRZ-I (P73)

☐ RZ

**Question No: 10 (Marks: 1) - Please choose one**

**Which of the encoding schemes have bandwidth problems?**

☐ Differential Manchester

☒ AMI (P77)

Ø RZ

**Question No: 11 (Marks: 1) - Please choose one**  
**Bi phase and bipolar are same terms.**

Ø True

Ø **False (P78)**

**Question No: 12 (Marks: 1) - Please choose one**  
**Quantization means measuring amplitudes of signal at equal intervals.**

Ø True

Ø **False (P80)**

**Question No: 13 (Marks: 1) - Please choose one**  
**The last process in PCM is \_\_\_\_\_ digital data into digital signal.**

Ø **Encoding (P70)**

Ø decoding

Ø modulating

**Question No: 14 (Marks: 1) - Please choose one**  
**Which modulation technique involves tribits, eight different phase shifts, and one mplitude?**

Ø FSK

Ø 8-PSK

Ø ASK

Ø 4-PSK

**Question No: 15 (Marks: 1) - Please choose one**  
**Asynchronous transmission is \_\_\_\_\_**

Ø **slow (P99)**

Ø costly

Ø non-effective

Ø fast

**Question No: 16 (Marks: 1) - Please choose one**  
**Synchronous transmission have \_\_\_\_\_.**

- ☐ a start bit
- ☐ a stop bit
- ☐ gaps between bytes
- ☒ none of the given (P99)

**Question No: 17 (Marks: 1) - Please choose one**  
**Asynchronous transmission**

**The \_\_\_\_\_ generates the data and passes it along with any control information to a \_\_\_\_\_.**

- ☒ DTE; DCE (P101)
- ☐ DCE; DTE
- ☐ DCE; node
- ☐ DTE; application

**Question No: 18 (Marks: 1) - Please choose one**  
**A human brain is considered as a \_\_\_\_\_**

- ☐ driver
- ☐ machine
- ☒ DTE (P101)
- ☐ DCE

**Question No: 19 (Marks: 1) - Please choose one**  
**The last modified version of EIA-232 standard is**

- 
- ☒ EIA-232 D (P102)
  - ☐ EIA-232 A
  - ☐ EIA-232 B
  - ☐ EIA-232 C

**Question No: 20 (Marks: 1) - Please choose one**

**A \_\_\_\_\_ converts an analog signal into a digital signal.**

- ☒ Demodulator (P110)



- Ø Modulator
- Ø Digital-to-analog converter

## Aamir khan Arranged presentation of cs601

**1. In a \_\_\_\_\_ connection, more than two devices can share a single link.**

- a. Point-to-point
- b. Primary
- c. Multipoint**
- d. Secondary

**2. Communication between a computer and a keyboard involves \_\_\_\_\_ transmission**

- a. Full-duplex
- b. Half-duplex
- c. Simplex**
- d. Automatic

**3. In a network with 25 computers, which topology would require the most extensive cabling?**

- a. Star
- b. Mesh**
- c. Bus
- d. Ring

**4. Which topology requires a central controller or hub?**

- a. Star**
- b. Mesh

- c. Bus
- d. Ring

**5. The \_\_\_\_\_ is the physical path over which a message travels.**

- a. Protocol
- b. Medium**
- c. Signal
- d. All of the above

**6. Which organization has authority over interstate and international commerce in the communications field?**

- a. ITU-T
- b. IEEE
- c. ISO

**d. FCC**

**answer (d): FCC**

**7. The information to be communicated in a data communications system is the \_\_\_\_\_**

- a. Medium
- b. Protocol
- c. Transmission

**d. Message**

**answer (d): Message**

**8. Frequency of failure and network recovery time after a failure are measures of the \_\_\_\_\_ of a network.**

- a. Performance
- b. Security
- c. Reliability**
- d. Feasibility

**answer (c): Reliability**

**9. In \_\_\_\_\_ transmission, the channel capacity is shared by both communicating devices at all times.**

**a. Full-duplex**

**A.K presentaon**

b. Simplex

c. Half-duplex

d. Half-Simplex

**answer (a): Full-duplex**

**10. An unauthorized user is a network \_\_\_\_\_ issue.**

a. Performance

b. Reliability

**c. Security**

d. All of the above

**answer (c): Security**

**11. Which topology requires a multipoint connection?**

a. Mesh

b. Star

c. Ring

**d. Bus**

**answer (d): Bus**

**12. A television broadcast is an example of \_\_\_\_\_ transmission.**

a. Half-duplex

b. Full-duplex

**c. Simplex**

d. Automatic

**answer (c): Simplex**

**13. A \_\_\_\_\_ connection provides a dedicated link between two devices.**

a. Multipoint

**b. Point-to-Point**

c. Primary

d. Secondary

**answer (b): Point-to-Point**

**14. A cable break in a \_\_\_\_\_ topology stops all transmission.**

- a. Mesh
- b. Star
- c. Primary

**d. Bus**

**answer** (d): Bus

## **Chapter 2: Network Models**

**15. The \_\_\_\_\_ layer changes bits into electromagnetic signals.**

**a. Physical**

- b. Transport
- c. None of the above
- d. Data link

**answer** (a): Physical

**16. The physical layer is concerned with the transmission of \_\_\_\_\_ over the physical medium.**

- a. Programs
- b. Protocols

**c. Bits**

- d. Dialogs

The correct **answer** is c

**17. Mail services are available to network users through the \_\_\_\_\_ layer.**

- a. Data link
- b. Physical

**c. Application**

- d. Transport

The correct **answer** is c

**18. As the data packet moves from the lower to the upper layers, headers are \_\_\_\_\_.**

- a. Added
- b. Rearranged
- c. Modified

**d. Subtracted**

The correct **answer** is d

**19. As the data packet moves from the upper to the lower layers, headers are \_\_\_\_\_.**

a. Removed

**b. Added**

c. Rearranged

d. Modified

The correct **answer** is b

**20. The \_\_\_\_\_ layer lies between the network layer and the application layer.**

a. Data link

b. Physical

**c. Transport**

d. None of the above

The correct **answer** is c

**21. Layer 2 lies between the physical layer and the \_\_\_\_\_ layer.**

a. Data link

**b. Network**

c. Transport

d. None of the above

The correct **answer** is b

Your **answer** is b

**22. When data are transmitted from device A to device B, the header from A's layer 4 is read by B's \_\_\_\_\_ layer.**

a. Application

b. Physical

**c. Transport**

d. None of the above

The correct **answer** is c

Your **answer** is a

**23. Which layer functions as a liaison between user support layers and network support layers?**

a. Network layer

**b. Transport layer**

c. Physical layer

d. Application layer

The correct **answer** is b

**24. What is the main function of the transport layer?**

**a. Process-to-process delivery**

b. Node-to-node delivery

c. Synchronization

d. Updating and maintenance of routing tables

The correct **answer** is a

**25. Which of the following is an application layer service?**

a. Remote log-in

b. File transfer and access

c. Mail service

**d. All the above**

The correct **answer** is d

**26. The Internet model consists of \_\_\_\_\_ layers.**

a. Three

**b. Five**

c. Seven

d. Eight

The correct **answer** is b

**27. The process-to-process delivery of the entire message is the responsibility of the**

**A.K presentaon**

**\_\_\_\_\_ layer.**

a. Physical

b. Network

**c. Transport**

d. Application

The correct **answer** is c

**28. The \_\_\_\_\_ layer is the layer closest to the transmission medium.**

a. Network

**b. Physical**

c. Data link

d. Transport

The correct **answer** is b

### **Chapter 3: Signals**

**29. Before data can be transmitted, they must be transformed to \_\_\_\_\_.**

a. Electromagnetic signals

b. Periodic signals

c. Aperiodic signals

d. Low-frequency sine waves

The correct **answer** is a

**30. When one of the components of a signal has a frequency of zero, the average amplitude of the signal \_\_\_\_\_.**

a. Is less than zero

b. Is greater than zero

c. Is zero

d. (a) or (b)

The correct **answer** is b

**31. A periodic signal can always be decomposed into \_\_\_\_\_.**

a. Exactly an odd number of sine waves

b. A set of sine waves, one of which must have a phase of  $0^\circ$

c. A set of sine waves

d. None of the above

The correct **answer** is c

**32. A periodic signal completes one cycle in 0.001 s. What is the frequency?**

a. 1 Hz

b. 100 Hz

- c. 1 KHz
- d. 1 MHz

The correct **answer** is c

33. In a frequency-domain plot, the horizontal axis measures the \_\_\_\_\_.

- a. Frequency
- b. Peak amplitude
- c. Phase
- d. Slope

The correct **answer** is a

34. In a time-domain plot, the vertical axis is a measure of \_\_\_\_\_.

- a. Frequency
- b. Phase
- c. Amplitude
- d. Time

The correct **answer** is c

35. In a time-domain plot, the horizontal axis is a measure of \_\_\_\_\_.

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- a. Signal amplitude
- b. Time
- c. Frequency
- d. Phase

The correct **answer** is b

36. If the bandwidth of a signal is 5 KHz and the lowest frequency is 52 KHz, what is the highest frequency?

- a. 5 KHz
- b. 10 KHz
- c. 47 KHz
- d. 57 KHz

The correct **answer** is d

37.

Your **answer** is a

38. What is the bandwidth of a signal that ranges from 40 KHz to 4 MHz?



- a. 3.96 MHz
- b. 36 MHz
- c. 360 KHz
- d. 396 KHz

The correct **answer** is a

39. As frequency increases, the period \_\_\_\_\_.

- a. Decreases
- b. Increases
- c. Remains the same
- d. Doubles

The correct **answer** is a

40. When propagation speed is multiplied by propagation time, we get the \_\_\_\_\_.

- a. Throughput
- b. Wavelength of the signal
- c. Distance a signal or bit has traveled
- d. Distortion factor

The correct **answer** is c

41. Propagation time is \_\_\_\_\_ proportional to distance and \_\_\_\_\_ proportional to propagation speed.

- a. Inversely; directly
- b. Inversely; inversely
- c. Directly; inversely
- d. Directly; directly

The correct **answer** is c

42. Wavelength is \_\_\_\_\_ proportional to propagation speed and \_\_\_\_\_ proportional to period.

- a. Directly; directly
- b. Inversely; directly
- c. Directly; inversely
- d. Inversely; inversely

The correct **answer** is a

43. Which of the following can be determined from a frequency-domain graph of a signal?

- a. Phase
- b. Power
- c. Frequency
- d. All the above

The correct **answer** is c

44. Which of the following can be determined from a frequency-domain graph of a signal?

- a. Phase
- b. Bandwidth
- c. Power

**A.K presentaon**

- d. All the above

The correct **answer** is b

45. In a frequency-domain plot, the vertical axis measures the \_\_\_\_\_.

- a. Frequency
- b. Peak amplitude
- c. Phase
- d. Slope

The correct **answer** is b

46. Given two sine waves A and B, if the frequency of A is twice that of B, then the period of B is \_\_\_\_\_ that of A.

- a. One-half
- b. Twice
- c. The same as
- d. Indeterminate from

The correct **answer** is b

47. The wavelength of green light in air is \_\_\_\_\_ the wavelength of green light in fiber-optic cable.

- a. Greater than
- b. Less than
- c. Equal to
- d. None of the above

The correct **answer** is b

48. Using the Shannon formula to calculate the data rate for a given channel, if  $C = B$ , then \_\_\_\_\_.

- a. The signal is equal to the noise
- b. The signal is less than the noise
- c. The signal is greater than the noise
- d. Not enough information is given to **answer** the question

The correct **answer** is a

49. A sine wave is \_\_\_\_\_.

- a. Aperiodic and continuous
- b. Periodic and discrete
- c. Aperiodic and discrete
- d. Periodic and continuous

The correct **answer** is d

50. If the maximum amplitude of a sine wave is 2 V, the minimum amplitude is \_\_\_\_\_ V.

- a. 2
- b. 1
- c. -2
- d. Between -2 and 2

The correct **answer** is c

51. A signal is measured at two different points. The power is  $P_1$  at the first point and  $P_2$  at the second point. The dB is 0. This means \_\_\_\_\_.

- a.  $P_2$  is zero
- b.  $P_2$  equals  $P_1$
- c.  $P_2$  is much larger than  $P_1$
- d.  $P_2$  is much smaller than  $P_1$

The correct **answer** is b

52. \_\_\_\_\_ is a type of transmission impairment in which the signal loses strength due to the resistance of the transmission medium.

- a. Distortion
- b. Noise
- c. Decibel

d. Attenuation

The correct **answer** is d

### **A.K presentaon**

53. \_\_\_\_\_ is a type of transmission impairment in which the signal loses strength due to the different propagation speeds of each frequency that makes up the signal.

a. Attenuation

b. Noise

c. Distortion

d. Decibel

The correct **answer** is c

54. \_\_\_\_\_ is a type of transmission impairment in which an outside source such as crosstalk corrupts a signal.

a. Attenuation

b. Noise

c. Distortion

d. Decibel

The correct **answer** is b

55.

The \_\_\_\_\_ has units of meters/second or kilometers/second.

a. Throughput

b. Propagation time

c. Propagation speed

d. (b) and (c)

The correct **answer** is c

56. \_\_\_\_\_ has units of bits/second.

a. Throughput

b. Propagation speed

c. Propagation time

d. (b) and (c)

The correct **answer** is a

57. The \_\_\_\_\_ has units of seconds.

a. Throughput

b. Propagation time

c. Propagation speed

d. (a) and (b)

The correct **answer** is b

58.

The wavelength of a signal depends on the \_\_\_\_\_.

a. Frequencies of the signal

b. Medium

c. Phase of the signal

d. (a) and (b)

The correct **answer** is d

Chapter 4: Encoding and Modulation

59. Which encoding technique attempts to solve the loss of synchronization due to long strings of 0s?

a. NRZ

b. BnZS

c. AMI

d. (a) and (b)

The correct **answer** is b

60. Block coding can help in \_\_\_\_\_ at the receiver.

a. Synchronization

b. Error detection

c. Attenuation

d. (a) and (b)

The correct **answer** is d

**A.K presentaon**

61. In \_\_\_\_\_ transmission, bits are transmitted simultaneously, each across its own wire.

a. Parallel

b. Asynchronous serial

c. Synchronous serial

d. (a) and (b)

The correct **answer** is a

62. Unipolar, bipolar, and polar encoding are types of \_\_\_\_\_ encoding.

- a. Block
- b. Line
- c. NRZ
- d. Manchester

The correct **answer** is b

63. \_\_\_\_\_ encoding has a transition at the middle of each bit.

- a. RZ
- b. Manchester
- c. Differential Manchester
- d. All the above

The correct **answer** is d

64. \_\_\_\_\_ encoding has a transition at the beginning of each 0 bit.

- a. Differential Manchester
- b. RZ
- c. Manchester
- d. All the above

The correct **answer** is a

65. PCM is an example of \_\_\_\_\_ conversion.

- a. Analog-to-analog
- b. Analog-to-digital
- c. Digital-to-digital
- d. Digital-to-analog

The correct **answer** is b

66. If the frequency spectrum of a signal has a bandwidth of 500 Hz with the highest frequency at 600 Hz, what should be the sampling rate, according to the Nyquist theorem?

- a. 500 samples/s
- b. 1000 samples/s
- c. 200 samples/s
- d. 1200 samples/s

The correct **answer** is d

67. One factor in the accuracy of a reconstructed PCM signal is the \_\_\_\_\_.

- a. Number of bits used for quantization

- b. Signal bandwidth
- c. Carrier frequency
- d. Baud rate

The correct **answer** is a

68. In asynchronous transmission, the gap time between bytes is \_\_\_\_\_.

- a. Fixed
- b. A function of the data rate
- c. Variable
- d. Zero

The correct **answer** is c

69. Synchronous transmission does not have \_\_\_\_\_.

- a. A start bit
- b. A stop bit
- c. Gaps between bytes
- d. All the above

### **A.K presentaon**

The correct **answer** is d

70. Which encoding type always has a nonzero average amplitude?

- a. Polar
- b. Bipolar
- c. Unipolar
- d. All the above

The correct **answer** is c

71. Which of the following encoding methods does not provide for synchronization?

- a. Manchester
- b. NRZ-L
- c. RZ
- d. NRZ-I

The correct **answer** is b

72. Which encoding method uses alternating positive and negative values for 1s?

- a. Manchester

- b. AMI
- c. NRZ-I
- d. RZ

The correct **answer** is b

73. In PCM, an analog-to- \_\_\_\_\_ conversion occurs.

- a. Analog
- b. Digital
- c. QAM
- d. Differential

The correct **answer** is b

74. If the maximum value of a PCM signal is 31 and the minimum value is -31, how many bits were used for coding?

- a. 4
- b. 5
- c. 6
- d. 7

The correct **answer** is c

75. RZ encoding involves \_\_\_\_\_ signal levels.

- a. Five
- b. Four
- c. Three
- d. Two

The correct **answer** is c

76. Which quantization level results in a more faithful reproduction of the signal?

- a. 2
- b. 8
- c. 16
- d. 32

The correct **answer** is d

77. In \_\_\_\_\_ transmission, bits are transmitted over a single wire, one at a time.

- a. Asynchronous serial
- b. Synchronous serial



- c. Parallel
- d. (a) and (b)

The correct **answer** is d

78. In \_\_\_\_\_ transmission, a start bit and a stop bit frame a character byte.

- a. Synchronous serial
- b. Asynchronous serial
- c. Parallel

### **A.K presentaon**

- d. (a) and (b)

The correct **answer** is b

79. If a symbol is composed of 3 bits, there are \_\_\_\_\_ data levels.

- a. 2
- b. 4
- c. 8
- d. 16

The correct **answer** is c

80. The Nyquist theorem specifies the minimum sampling rate to be\_\_\_\_\_.

- a. Twice the bandwidth of a signal
- b. Twice the highest frequency of a signal
- c. Equal to the lowest frequency of a signal
- d. Equal to the highest frequency of a signal

The correct **answer** is b

81. Pulse rate is always \_\_\_\_\_ the bit rate.

- a. Less than
- b. Less than or equal to
- c. Greater than
- d. Greater than or equal to

The correct **answer** is b

### Chapter 5: Multiplexing

82. AM and FM are examples of \_\_\_\_\_ modulation.

- a. Analog-to-analog
- b. Analog-to-digital

- c. Digital-to-digital
- d. Digital-to-analog

The correct **answer** is a

Your **answer** is a

83. In QAM, both phase and \_\_\_\_\_ of a carrier frequency are varied.

- a. Frequency
- b. Bit rate
- c. Amplitude
- d. Baud rate

The correct **answer** is c

84. Which of the following is most affected by noise?

- a. PSK
- b. FSK
- c. QAM
- d. ASK

The correct **answer** is d

85. ASK, PSK, FSK, and QAM are examples of \_\_\_\_\_ modulation.

- a. Analog-to-analog
- b. Analog-to-digital
- c. Digital-to-digital
- d. Digital-to-analog

The correct **answer** is d

86. If the baud rate is 400 for a 4-PSK signal, the bit rate is \_\_\_\_\_ bps.

- a. 1600
- b. 100
- c. 800
- d. 400

### **A.K presentaon**

The correct **answer** is b

87. If the bit rate for an ASK signal is 1200 bps, the baud rate is \_\_\_\_\_.

- a. 300
- b. 400

- c. 600
- d. 1200

The correct **answer** is d

88. As the bit rate of an FSK signal increases, the bandwidth \_\_\_\_\_.

- a. Remains the same
- b. Decreases
- c. Increases
- d. Doubles

The correct **answer** is c

89. In 16-QAM, there are 16 \_\_\_\_\_.

- a. Phases
- b. Combinations of phase and amplitude
- c. Amplitudes
- d. bps

The correct **answer** is b

90. Which modulation technique involves tribits, eight different phase shifts, and one amplitude?

- a. FSK
- b. ASK
- c. 4-PSK
- d. 8-PSK

The correct **answer** is d

91. If the bit rate for an FSK signal is 1200 bps, the baud rate is \_\_\_\_\_.

- a. 300
- b. 400
- c. 600
- d. 1200

The correct **answer** is d

92. If the bit rate for a QAM signal is 3000 bps and a signal unit is represented by a tribit, what is the baud rate?

- a. 300
- b. 400
- c. 1000

d. 1200

The correct **answer** is c

93. If the baud rate for a QAM signal is 3000 and a signal unit is represented by a tribit, what is the bit rate?

a. 300

b. 400

c. 1000

d. 9000

The correct **answer** is d

94. If the baud rate for a QAM signal is 1800 and the bit rate is 9000, how many bits are there per signal unit?

a. 3

b. 4

c. 5

d. 6

The correct **answer** is c

95. Given an AM radio signal with a bandwidth of 10 KHz and the highest-frequency component at 705 KHz, what is the frequency of the carrier signal?

a. 705 KHz

b. 700 KHz

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c. 710 KHz

d. Cannot be determined from given information

The correct **answer** is b

96. A modulated signal is formed by \_\_\_\_\_.

a. Changing the carrier wave by the modulating signal

b. Quantization of the source data

c. Changing the modulating signal by the carrier wave

d. Sampling at the Nyquist frequency

The correct **answer** is a

97. If FCC regulations are followed, the carrier frequencies of adjacent AM radio stations are \_\_\_\_\_ apart.

a. 5 KHz

- b. 10 KHz
- c. 200 KHz
- d. 530 KHz

The correct **answer** is b

98. If FCC regulations are followed, \_\_\_\_\_ potential FM stations are theoretically possible in a given area.

- a. 50
- b. 100
- c. 133
- d. 150

The correct **answer** is a

99. When an ASK signal is decomposed, the result is \_\_\_\_\_.

- a. An infinite number of sine waves
- b. Always one sine wave
- c. Always two sine waves
- d. None of the above

The correct **answer** is a

100. The bandwidth of an FM signal requires 10 times the bandwidth of the \_\_\_\_\_ signal.

- a. Bipolar
- b. Sampling
- c. Carrier
- d. Modulating

The correct **answer** is d

101. Modulation of an analog signal can be accomplished through changing the \_\_\_\_\_ of the carrier signal.

- a. Amplitude
- b. Frequency
- c. Phase
- d. Any of the above

The correct **answer** is d

102. For a telephone line, the bandwidth for voice is usually \_\_\_\_\_ the bandwidth for data.

- a. Less than

- b. Greater than
- c. Twice
- d. Equivalent to

The correct **answer** is b

103. For a given bit rate, the minimum bandwidth for ASK is \_\_\_\_\_ the minimum bandwidth for FSK.

- a. Less than
- b. Equivalent to
- c. Greater than
- d. Twice

The correct **answer** is a

104. What is the object of trellis coding?

- a. To narrow the bandwidth

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- b. To increase the data rate
- c. To reduce the error rate
- d. To simplify modulation

The correct **answer** is c

105. A modulator converts a(n) \_\_\_\_\_ signal to a(n) \_\_\_\_\_ signal.

- a. Digital; analog
- b. Analog; digital
- c. PSK; FSK
- d. FSK; PSK

The correct **answer** is a

106. A 56K modem can download at a rate of \_\_\_\_\_ Kbps and upload at a rate of \_\_\_\_\_ Kbps.

- a. 56.6; 33.6
- b. 56.6; 56.6
- c. 33.6; 33.6
- d. 33.6; 56.6

The correct **answer** is a

107. For FSK, as the difference between the two carrier frequencies increases, the bandwidth \_\_\_\_\_.

- a. Remains the same

- b. Decreases
- c. Increases
- d. Halves

The correct **answer** is c

108. The bit rate always equals the baud rate in which type of signal?

- a. FSK
- b. QAM
- c. 4-PSK
- d. All the above

The correct **answer** is a

109. Which ITU-T modem standard uses trellis coding?

- a. V.32
- b. V.33
- c. V.34
- d. (a) and (b)

The correct **answer** is a

110. In trellis coding the number of data bits is \_\_\_\_\_ the number of transmitted bits.

- a. Less than
- b. More than
- c. Equal to
- d. Double that of

The correct **answer** is a

Chapter 6: Switching

111. Which multiplexing technique transmits digital signals?

- a. WDM
- b. FDM
- c. TDM
- d. None of the above

The correct **answer** is c

112. Which multiplexing technique shifts each signal to a different carrier frequency?

- a. TDM

- b. FDM
- c. Both (a) and (b)
- d. None of the above

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The correct **answer** is b

113. In TDM, for n signal sources of the same data rate, each frame contains \_\_\_\_\_ slots.

- a. 0 to n
- b. n
- c. n + 1
- d. n - 1

The correct **answer** is b

114. In TDM, the transmission rate of the multiplexed path is usually \_\_\_\_\_ the sum of the transmission rates of the signal sources.

- a. 1 less than
- b. Greater than
- c. Less than
- d. Equal to

The correct **answer** is b

115. DS-1 through DS-4 are \_\_\_\_\_ while T-1 through T-4 are \_\_\_\_\_.

- a. Services; signals
- b. Services; lines
- c. Services; multiplexers
- d. Multiplexers; signals

The correct **answer** is b

116. The sharing of a medium and its link by two or more devices is called \_\_\_\_\_.

- a. Modulation
- b. Encoding
- c. Multiplexing
- d. Line discipline

The correct **answer** is c



117. In AT&T's FDM hierarchy, the bandwidth of each group type can be found by multiplying \_\_\_\_\_ and adding extra bandwidth for guard bands.

- a. The sampling rate by 4000 Hz
- b. The number of voice channels by 4000 Hz
- c. The number of voice channels by 8 bits/sample
- d. The sampling rate by 8 bits/sample

The correct **answer** is b

118. Guard bands increase the bandwidth for \_\_\_\_\_.

- a. TDM
- b. FDM
- c. Both (a) and (b)
- d. None of the above

The correct **answer** is b

119. Which multiplexing technique transmits analog signals?

- a. FDM
- b. TDM
- c. WDM
- d. (a) and (c)

The correct **answer** is d

120. In a T-1 line, \_\_\_\_\_ interleaving occurs.

- a. Bit
- b. Byte
- c. DS-0
- d. Switch

The correct **answer** is b

121. Which multiplexing technique involves signals composed of light beams?

- a. WDM

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- b. FDM
- c. TDM
- d. None of the above

The correct **answer** is a

## Chapter 7: Transmission Media

122. The VLF and LF bands use \_\_\_\_\_ propagation for communications.

- a. Space
- b. Ground
- c. Sky
- d. Line of sight

The correct **answer** is b

123. Category 1 UTP cable is most often used in \_\_\_\_\_ networks.

- a. Infrared
- b. Telephone
- c. Fast Ethernet
- d. Traditional Ethernet

The correct **answer** is b

124. BNC connectors are used by \_\_\_\_\_ cables.

- a. Fiber-optic
- b. UTP
- c. STP
- d. Coaxial

The correct **answer** is d

125. Which of the following is not a guided medium?

- a. Twisted-pair cable
- b. Fiber-optic cable
- c. Atmosphere
- d. Coaxial cable

The correct **answer** is c

126. In an environment with many high-voltage devices, the best transmission medium would be \_\_\_\_\_.

- a. Twisted-pair cable
- b. Coaxial cable
- c. The atmosphere
- d. Optical fiber

The correct **answer** is d

127. \_\_\_\_\_ cable consists of an inner copper core and a second conducting outer sheath.

- a. Coaxial
- b. Twisted-pair
- c. Fiber-optic
- d. Shielded twisted-pair

The correct **answer** is a

128. In fiber optics, the signal source is \_\_\_\_\_ waves.

- a. Very low-frequency
- b. Light
- c. Radio
- d. Infrared

The correct **answer** is b

129. Smoke signals are an example of communication through \_\_\_\_\_.

- a. A guided medium
- b. A refractive medium
- c. An unguided medium
- d. A small or large medium

The correct **answer** is c

### **A.K presentaon**

130. Which of the following primarily uses guided media?

- a. Cellular telephone system
- b. Satellite communications
- c. Local telephone system
- d. Radio broadcasting

The correct **answer** is c

131. What is the major factor that makes coaxial cable less susceptible to noise than twisted-pair cable?

- a. Outer conductor
- b. Inner conductor
- c. Diameter of cable
- d. Insulating material

The correct **answer** is a

132. The RG number gives us information about \_\_\_\_\_.

- a. Optical fibers
- b. Twisted pairs
- c. Coaxial cables
- d. All the above

The correct **answer** is c

133. Transmission media are usually categorized as \_\_\_\_\_.

- a. Guided or unguided
- b. Fixed or unfixed
- c. Determinate or indeterminate
- d. Metallic or nonmetallic

The correct **answer** is a

134. The \_\_\_\_\_ is an association that sponsors the use of infrared waves.

- a. EIA
- b. IrDA
- c. FCC
- d. PUD

The correct **answer** is b

135. In an optical fiber, the inner core is \_\_\_\_\_ the cladding.

- a. Less dense than
- b. Denser than
- c. The same density as
- d. Another name for

The correct **answer** is b

136. The inner core of an optical fiber is \_\_\_\_\_ in composition.

- a. Copper
- b. Bimetallic
- c. Glass or plastic
- d. Liquid

The correct **answer** is c

137. When a beam of light travels through media of two different densities, if the angle of incidence is greater than the critical angle, \_\_\_\_\_ occurs.

- a. Refraction
- b. Reflection
- c. Incidence
- d. Criticism

The correct **answer** is b

138. In \_\_\_\_\_ propagation, the beam of propagated light is almost horizontal, and the low-density core has a small diameter compared to the cores of the other propagation modes.

- a. Single-mode
- b. Multimode step-index

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- c. Multimode graded-index
- d. Multimode single-index

The correct **answer** is a

139. \_\_\_\_\_ is the propagation method subject to the greatest distortion.

- a. Single-mode
- b. Multimode step-index
- c. Multimode graded-index
- d. Multimode single-index

The correct **answer** is b

140. In \_\_\_\_\_ propagation, the core is of varying densities.

- a. Single-mode
- b. Multimode step-index
- c. Multimode graded-index
- d. Multimode single-index

The correct **answer** is c

141. When we talk about unguided media, usually we are referring to \_\_\_\_\_.

- a. Metallic wires
- b. Nonmetallic wires
- c. The air
- d. None of the above

The correct **answer** is c

142. Transmission media are closest to the \_\_\_\_\_ layer.

- a. Application
- b. Physical
- c. Network
- d. Transport

The correct **answer** is b

143. Radio wave and microwave frequencies range from \_\_\_\_\_.

- a. 3 to 300 KHz
- b. 300 KHz to 3 GHz
- c. 3 KHz to 300 GHz
- d. 3 KHz to 3000 GHz

The correct **answer** is c

144. Optical fibers, unlike wire media, are highly resistant to \_\_\_\_\_.

- a. High-frequency transmission
- b. Low-frequency transmission
- c. Refraction
- d. Electromagnetic interference

The correct **answer** is d

145. In \_\_\_\_\_ propagation, low-frequency radio waves hug the earth.

- a. Space
- b. Ground
- c. Sky
- d. Line of sight

The correct **answer** is b

146. When the angle of incidence is \_\_\_\_\_ the critical angle, the light beam bends along the interface.

- a. More than
- b. Less than
- c. Equal to
- d. None of the above

The correct **answer** is c

147. A parabolic dish antenna is a(n) \_\_\_\_\_ antenna.

- a. Omnidirectional

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- b. Bidirectional
- c. Horn
- d. Unidirectional

The correct **answer** is d

## Chapter 8 : Telephone, Cable, and Satellite Networks

148. The telephone service handled between two LATAs is called \_\_\_\_\_.

- a. An ILEC
- b. An IXC
- c. A CLEC
- d. A POP

The correct **answer** is b

149. How many crosspoints are needed in a single-stage switch with 40 inputs and 50 outputs?

- a. 2000
- b. 90
- c. 50
- d. 40

The correct **answer** is a

150. The \_\_\_\_\_ is a device that connects n inputs to m outputs.

- a. Crossbar
- b. Crosspoint
- c. Modem
- d. RAM

The correct **answer** is a

151. The established telephone company that provided services in a LATA before 1966 and owns the cabling system is called \_\_\_\_\_.

- a. A CLEC
- b. An IXC
- c. An ILEC
- d. A POP

The correct **answer** is c

152. In a crossbar with 1000 crosspoints, approximately how many are in use at any time?

- a. 100
- b. 250
- c. 500
- d. 1000

The correct **answer** is b

153. The \_\_\_\_\_ of a TSI controls the order of delivery of slot values that are stored in RAM.

- a. Crossbar
- b. Crosspoint
- c. Transceiver
- d. Control unit

The correct **answer** is d

154. Which of the following is a time-division switch?

- a. TSI
- b. TDM bus
- c. Crosspoint
- d. (a) and (b)

The correct **answer** is d

155. In a time-division switch, a \_\_\_\_\_ governs the destination of a packet stored in RAM.

- a. Control unit
- b. TDM bus
- c. Crosspoint
- d. Crossbar

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The correct **answer** is a

156. A telephone network is an example of a \_\_\_\_\_ network.

- a. Circuit-switched
- b. Packet-switched
- c. Message-switched
- d. None of the above

The correct **answer** is a



157. The local loop has \_\_\_\_\_ cable that connects the subscriber telephone to the nearest end office.

- a. Coaxial
- b. Fiber-optic
- c. Twisted-pair
- d. (b) and (c)

The correct **answer** is c

158. Trunks are transmission media such as \_\_\_\_\_ that handle the telephone communication between offices.

- a. Twisted-pair cable
- b. Fiber-optic cable
- c. Satellite links
- d. (b) and (c)

The correct **answer** is d

159. A new telephone company that provides services in a LATA after 1966 is called \_\_\_\_\_.

- a. An ILEC
- b. An IXC
- c. A POP
- d. A CLEC

The correct **answer** is d

160. If the end office receives two bursts of analog signals with frequencies of 697 and 1477 Hz, then the number \_\_\_\_\_ has been punched.

- a. 1
- b. 2
- c. 3
- d. 4

The correct **answer** is c

161. In \_\_\_\_\_ circuit switching, delivery of data is delayed because data must be stored and retrieved from RAM.

- a. Time-division
- b. Space-division
- c. Virtual

d. Packet

The correct **answer** is a

162. Data from a computer are \_\_\_\_; the local loop handles \_\_\_\_ signals.

a. Digital; digital

b. Digital; analog

c. Analog; analog

d. Analog; digital

The correct **answer** is b

163. To create a \_\_\_\_, combine crossbar switches in stages.

a. TSI

b. Multistage switch

c. Crosspoint

d. Packet switch

The correct **answer** is b

164. A traditional telephone line has a bandwidth of \_\_\_\_.

a. 2000 Hz

b. 4000 Hz

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c. 2000 MHz

d. 4000 MHz

The correct **answer** is b

Chapter 9 : Flow and Error Control

165. SONET is a standard for \_\_\_\_ networks.

a. Twisted-pair cable

b. Fiber-optic cable

c. Coaxial cable

d. Ethernet

The correct **answer** is b

166. \_\_\_\_ limit the bandwidth of the local loop to 4 KHz.

a. Fiber nodes

b. Repeaters

c. Filters

d. Hubs

The correct **answer** is c

167. The actual bit rate of ADSL downstream data is \_\_\_\_\_.

- a. 6 to 30 Kbps
- b. 64 Kbps to 1 Mbps
- c. 500 Kbps to 8 Mbps
- d. 31 Kbps to 255 Mbps

The correct **answer** is c

168. \_\_\_\_\_ is a device at the telephone company site that can packetize data to be sent to the ISP server.

- a. A filter
- b. A splitter
- c. A DSLAM
- d. An ADSL modem

The correct **answer** is c

169. The standard for data transmission over an HFC network is called \_\_\_\_\_.

- a. DOCSIS
- b. CMTS
- c. MCNS
- d. ADSL

The correct **answer** is a

170. DMT is a modulation technique that combines elements of \_\_\_\_\_ and \_\_\_\_\_.

- a. FDM; TDM
- b. QDM; QAM
- c. PSK; FSK
- d. FDM; QAM

The correct **answer** is d

171. The \_\_\_\_\_ is an HFC network device installed inside the distribution hub that receives data from the Internet and passes them to the combiner.

- a. DOCSIS
- b. MCNS
- c. CM

d. CMTS

The correct **answer** is d

172. HDSL encodes data using \_\_\_\_\_.

a. 6B/8T

b. 4B/5B

c. 2B1Q

d. 1B2Q

The correct **answer** is c

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Your **answer** is a

173. \_\_\_\_\_ encoded signal is more susceptible to attenuation than \_\_\_\_\_ encoded signal.

a. An AMI; a 2B1Q

b. An AMI; a 2B2Q

c. A 2B1Q; an AMI

d. None of the above

The correct **answer** is a

174. Another name for the cable TV office is the \_\_\_\_\_.

a. Fiber node

b. Combiner

c. Head end

d. Splitter

The correct **answer** is c

175. A traditional cable TV network transmits signals \_\_\_\_\_.

a. Upstream and downstream

b. Upstream

c. Downstream

d. None of the above

The correct **answer** is c

176. \_\_\_\_\_ was designed as an alternative to the T-1 line.

a. VDSL

b. SDSL

c. HDSL

d. ADSL

The correct **answer** is c

177. The synchronous payload envelope of an STS-1 frame contains \_\_\_\_\_.

- a. Pointers
- b. User data
- c. Overhead
- d. (b) and (c)

The correct **answer** is d

178. \_\_\_\_\_ has a higher transmission rate in the downstream direction than in the upstream direction.

- a. VDSL
- b. ADSL
- c. SDSL
- d. (a) and (b)

The correct **answer** is d

179. An HFC network uses \_\_\_\_\_ as the medium from the switch to the fiber node.

- a. UTP
- b. STP
- c. Optical fiber
- d. Coaxial cable

The correct **answer** is c

180. In an HFC network, the distribution hub handles the \_\_\_\_\_ of signals.

- a. Modulation
- b. Distribution
- c. Splitting
- d. (a) and (b)

The correct **answer** is d

181. A TV channel in an HFC network needs a \_\_\_\_\_-MHz bandwidth.

- a. 369
- b. 6
- c. 100

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d. 250

The correct **answer** is b

182. \_\_\_\_\_ data go from the subscriber to the Internet.

- a. Downstream
- b. Upstream
- c. Midstream
- d. None of the above

The correct **answer** is b

183. In an HFC network, the upstream data are modulated using the \_\_\_\_\_ modulation technique.

- a. PCM
- b. QAM
- c. QPSK
- d. ASK

The correct **answer** is b

184. \_\_\_\_\_ is suitable for businesses that require comparable upstream and downstream data rates.

- a. SDSL
- b. VDSL
- c. ADSL
- d. (a) and (b)

The correct **answer** is a

185. SONET is an acronym for \_\_\_\_\_ Network.

- a. Standard Optical
- b. Symmetric Open
- c. Synchronous Optical
- d. Standard Open

The correct **answer** is c

186. The largest portion of the bandwidth for ADSL carries \_\_\_\_\_.

- a. Voice communication
- b. Downstream data
- c. Upstream data
- d. Control data

The correct **answer** is b

187. In a SONET system, \_\_\_\_\_ can remove signals from a path.

- a. An add/drop multiplexer
- b. A repeater
- c. An STS multiplier
- d. A regenerator

The correct **answer** is a

Chapter 10 : Access Method

188. Which of the following best describes a single-bit error?

- a. A single bit is inverted.
- b. A single bit is inverted per transmission.
- c. A single bit is inverted per data unit.
- d. Any of the above

The correct **answer** is c

189. Which error detection method uses ones complement arithmetic?

- a. Simple parity check
- b. Checksum
- c. Two-dimensional parity check
- d. CRC

The correct **answer** is b

190. Which error detection method consists of just one redundant bit per data unit?

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- a. Two-dimensional parity check
- b. CRC
- c. Simple parity check
- d. Checksum

The correct **answer** is c

191. Which error detection method involves polynomials?

- a. CRC
- b. Simple parity check
- c. Two-dimensional parity check
- d. Checksum

The correct **answer** is a

192. If the ASCII character G is sent and the character D is received, what type of error is this?

- a. Single-bit
- b. Multiple-bit
- c. Burst
- d. Recoverable

The correct **answer** is c

193. If the ASCII character H is sent and the character I is received, what type of error is this?

- a. Burst
- b. Recoverable
- c. Single-bit
- d. Multiple-bit

The correct **answer** is c

194. In cyclic redundancy checking, what is the CRC?

- a. The remainder
- b. The divisor
- c. The quotient
- d. The dividend

The correct **answer** is a

195. Which error detection method involves the use of parity bits?

- a. Simple parity check
- b. Two-dimensional parity check
- c. CRC
- d. (a) and (b)

The correct **answer** is d

196. In cyclic redundancy checking, the divisor is \_\_\_\_\_ the CRC.

- a. The same size as
- b. 1 bit more than
- c. 1 bit less than
- d. 2 bits more than

The correct **answer** is b



197. If the data unit is 111111, the divisor 1010, and the remainder 110, what is the dividend at the receiver?

- a. 111111011
- b. 1010110
- c. 111111110
- d. 110111111

The correct **answer** is c

198. Which error detection method consists of a parity bit for each data unit as well as an entire data unit of parity bits?

- a. Simple parity check
- b. Checksum
- c. Two-dimensional parity check
- d. CRC

The correct **answer** is c

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199. If the data unit is 111111 and the divisor 1010, what is the dividend at the transmitter?

- a. 1111110000
- b. 111111000
- c. 111111
- d. 1111111010

The correct **answer** is b

200. If odd parity is used for ASCII error detection, the number of 0s per 8-bit symbol is \_\_\_\_\_.

- a. Indeterminate
- b. 42
- c. Even
- d. Odd

The correct **answer** is d

201. In CRC there is no error if the remainder at the receiver is \_\_\_\_\_.

- a. Nonzero
- b. The quotient at the sender
- c. Equal to the remainder at the sender

d. Zero

The correct **answer** is d

202. At the CRC generator, \_\_\_\_\_ added to the data unit after the division process.

a. 0s are

b. 1s are

c. The CRC remainder is

d. The polynomial is

The correct **answer** is c

203. The sum of the checksum and data at the receiver is \_\_\_\_\_ if there are no errors.

a. -0

b. +0

c. The complement of the checksum

d. The complement of the data

The correct **answer** is a

204. In CRC the quotient at the sender \_\_\_\_\_.

a. Becomes the dividend at the receiver

b. Becomes the divisor at the receiver

c. Is the remainder

d. Is discarded

The correct **answer** is d

205. The Hamming code is a method of \_\_\_\_\_.

a. Error detection

b. Error correction

c. Error encapsulation

d. (a) and (b)

The correct **answer** is d

206. At the CRC checker, \_\_\_\_\_ means that the data unit is damaged.

a. A string of alternating 1s and 0s

b. A nonzero remainder

c. A string of 0s

d. A string of 1s

The correct **answer** is b

207. Which error detection method can detect a single-bit error?

- a. Simple parity check
- b. Two-dimensional parity check
- c. CRC
- d. All the above

The correct **answer** is d

### **A.K presentaon**

208. Which error detection method can detect a burst error?

- a. The parity check
- b. Two-dimensional parity check
- c. CRC
- d. (b) and (c)

The correct **answer** is d

209. At the CRC generator, \_\_\_\_\_ added to the data unit before the division process.

- a. A polynomial is
- b. A CRC remainder is
- c. 0s are
- d. 1s are

The correct **answer** is c

### Chapter 11 : Wired Local Area Networks

210. HDLC is an acronym for \_\_\_\_\_.

- a. High-duplex line communication
- b. Half-duplex digital link combination
- c. High-level data link control
- d. Host double-level circuit

The correct **answer** is c

211. Flow control is needed to prevent \_\_\_\_\_.

- a. Overflow of the sender buffer
- b. Overflow of the receiver buffer
- c. Bit errors
- d. Collision between sender and receiver

The correct **answer** is b

212. In a Go-Back-N ARQ, if the window size is 63, what is the range of sequence numbers?

- a. 1 to 63
- b. 1 to 64
- c. 0 to 63
- d. 0 to 64

The correct **answer** is c

213. For a sliding window of size  $n - 1$  ( $n$  sequence numbers), there can be a maximum of \_\_\_\_\_ frames sent but unacknowledged.

- a. 0
- b.  $n$
- c.  $n - 1$
- d.  $n + 1$

The correct **answer** is b

214. When data and acknowledgment are sent on the same frame, this is called \_\_\_\_\_.

- a. Backpacking
- b. Piggypacking
- c. Piggybacking
- d. A good idea

The correct **answer** is c

215. In \_\_\_\_\_ ARQ, if a NAK is received, only the specific damaged or lost frame is retransmitted.

- a. Go-Back-N
- b. Stop-and-Wait
- c. Selective Repeat
- d. (a) and (b)

The correct **answer** is a

216. ARQ stands for \_\_\_\_\_.

- a. Automatic repeat request

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- b. Automatic retransmission request
- c. Acknowledge repeat request

d. Automatic repeat quantization

The correct **answer** is a

217. In Go-Back-N ARQ, if frames 4, 5, and 6 are received successfully, the receiver may send an ACK \_\_\_\_\_ to the sender.

a. 5

b. 6

c. 7

d. Any of the above

The correct **answer** is d

218. The shortest frame in HDLC protocol is usually the \_\_\_\_\_ frame.

a. Information

b. Management

c. Supervisory

d. None of the above

The correct **answer** is c

219. The address field of a frame in HDLC protocol contains the address of the \_\_\_\_\_ station.

a. Primary

b. Secondary

c. Tertiary

d. (a) or (b)

The correct **answer** is b

220. The HDLC \_\_\_\_\_ field defines the beginning and end of a frame.

a. Address

b. Control

c. Flag

d. FCS

The correct **answer** is c

221. A timer is set when \_\_\_\_\_ is (are) sent out.

a. An ACK

b. A NAK

c. A data frame

d. All the above

The correct **answer** is c

222. For Stop-and-Wait ARQ, for n data packets sent, \_\_\_\_\_ acknowledgments are needed.

- a.  $n - 1$
- b.  $n + 1$
- c.  $n$
- d.  $2n$

The correct **answer** is c

223. What is present in all HDLC control fields?

- a.  $N(R)$
- b.  $N(S)$
- c. Code bits
- d. P/F bit

The correct **answer** is d

Chapter 12 : Wireless Local Area Networks

224. According to the PPP transition state diagram, options are negotiated in the \_\_\_\_\_ state.

- a. Networking
- b. Terminating
- c. Establishing
- d. Authenticating

The correct **answer** is c

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225. According to the PPP transition state diagram, verification of user identification occurs in the \_\_\_\_\_ state.

- a. Networking
- b. Terminating
- c. Establishing
- d. Authenticating

The correct **answer** is d

226. PAP requires \_\_\_\_\_ and \_\_\_\_\_ from the user.

- a. A password; a calculated value
- b. Authentication identification; a calculated value
- c. Authentication identification; a password

d. A challenge value; a password

The correct **answer** is c

227. According to the PPP transition state diagram, the link is disconnected in the \_\_\_\_\_ state.

- a. Networking
- b. Terminating
- c. Establishing
- d. Authenticating

The correct **answer** is b

228. In the PPP frame, the \_\_\_\_\_ field defines the contents of the data field.

- a. FCS
- b. Flag
- c. Control
- d. Protocol

The correct **answer** is d

229. According to the PPP transition state diagram, exchange of user control and data packets occurs in the \_\_\_\_\_ state.

- a. Networking
- b. Terminating
- c. Establishing
- d. Authenticating

The correct **answer** is a

230. \_\_\_\_\_, an (a)\_\_\_\_\_ protocol, establishes and terminates a network layer connection for IP packets.

- a. CHAP; NCP
- b. IPCP; NCP
- c. NCP; IPCP
- d. SLIP; PPP

The correct **answer** is b

231. In the PPP frame, the \_\_\_\_\_ field is similar to that of the U-frame in HDLC.

- a. Flag
- b. Protocol

- c. FCS
- d. Control

The correct **answer** is d

232. In the PPP frame, the \_\_\_\_\_ field has a value of 11111111 to indicate the broadcast address of HDLC.

- a. Protocol
- b. Address
- c. Control
- d. FCS

The correct **answer** is b

233. What is the purpose of LCP packets?

- a. Configuration
- b. Termination
- c. Option negotiation
- d. All the above

### **A.K presentaon**

The correct **answer** is d

234. \_\_\_\_\_ is a three-way handshake for user verification.

- a. PPP
- b. CHAP
- c. PAP
- d. (b) and (c)

The correct **answer** is b

235. A PAP packet and a CHAP packet can be distinguished by the value of the \_\_\_\_\_ field of the PPP frame.

- a. Protocol
- b. FCS
- c. Address
- d. Control

The correct **answer** is d

236. In the PPP frame, the \_\_\_\_\_ field is for error control.

- a. FCS
- b. Flag
- c. Control



d. Protocol

The correct **answer** is a

237. CHAP authentication, the user takes the system's \_\_\_\_\_ and its own \_\_\_\_\_ to create a result that is then sent to the system.

a. Authentication identification; password

b. Password; authentication identification

c. Challenge value; password

d. Password; challenge value

The correct **answer** is c

238. If an FDMA network has eight stations, the medium bandwidth has \_\_\_\_\_ bands.

a. 1

b. 2

c. 8

d. 16

The correct **answer** is c

239. In the \_\_\_\_\_ random-access method there is no collision.

a. CSMA/CD

b. CSMA/CA

c. ALOHA

d. Token-passing

The correct **answer** is b

240. In the 1-persistent approach, when a station finds an idle line, it \_\_\_\_\_.

a. Sends immediately

b. Waits 0.1 s before sending

c. Waits 1 s before sending

d. Waits a time equal to  $1 - p$  before sending

The correct **answer** is a

241. \_\_\_\_\_ requires one primary station and one or more secondary stations.

a. Token ring

b. Reservation

- c. Polling
- d. CSMA

The correct **answer** is c

242. In the p-persistent approach, when a station finds an idle line, it \_\_\_\_\_.

- a. Sends immediately
- b. Waits 1 s before sending

**A.K presentaon**

- c. Sends with probability  $1 - p$
- d. Sends with probability  $p$

The correct **answer** is d

243. A network using the CSMA random-access method with  $p$  equal to 0.25 will send \_\_\_\_\_ percent of the time after accessing an idle line.

- a. 50
- b. 75
- c. 100
- d. 25

The correct **answer** is d

244. The 1-persistent approach can be considered a special case of the p-persistent approach with  $p$  equal to \_\_\_\_\_.

- a. 1.0
- b. 2.0
- c. 0.1
- d. 0.5

The correct **answer** is a

245. \_\_\_\_\_ is a random-access protocol.

- a. FDMA
- b. CDMA
- c. MA
- d. Polling

The correct **answer** is c

246. In the reservation access method, if there are 10 stations on a network, then there are \_\_\_\_\_ reservation minislots in the

reservation frame.

- a. 10
- b. 11
- c. 5
- d. 9

The correct **answer** is a

247. A Walsh table for 16 stations has a chip sequence of \_\_\_\_\_ chips.

- a. 16
- b. 32
- c. 4
- d. 8

The correct **answer** is a

248. \_\_\_\_\_ is a controlled-access protocol.

- a. FDMA
- b. TDMA
- c. CSMA
- d. Reservation

The correct **answer** is d

249. \_\_\_\_\_ is (are) a channelization protocol.

- a. FDMA
- b. TDMA
- c. CDMA
- d. All the above

The correct **answer** is d

250. \_\_\_\_\_ is the access protocol used by traditional Ethernet.

- a. Token ring
- b. CSMA
- c. CSMA/CD
- d. CSMA/CA

The correct **answer** is c

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251. The most primitive random access method is \_\_\_\_\_.

- a. Channelization

- b. ALOHA
- c. CSMA
- d. Token passing

The correct **answer** is b

252. When a collision is detected in a network using CSMA/CD, \_\_\_\_\_.

- a. The frame is immediately resent
- b. The backoff value is decremented by 1
- c. A jam signal is sent by the station
- d. The backoff value is set to 0

The correct **answer** is c

253. In the \_\_\_\_\_ random-access method, stations do not sense the medium.

- a. CSMA/CA
- b. ALOHA
- c. CSMA/CD
- d. Ethernet

The correct **answer** is b

254. When a primary device asks a secondary device if it has data to send, this is called \_\_\_\_\_.

- a. Backing off
- b. Polling
- c. Selecting
- d. Reserving

The correct **answer** is b

255. If a TDMA network has eight stations, the medium bandwidth has \_\_\_\_\_ bands.

- a. 1
- b. 2
- c. 8
- d. 16

The correct **answer** is a

256. If a CDMA network has eight stations, the medium bandwidth has \_\_\_\_\_ bands.

- a. 1
- b. 2
- c. 8
- d. 16

The correct **answer** is a

257. If an Ethernet destination address is 08-07-06-05-44-33, then this is a \_\_\_\_\_ address.

- a. Broadcast
- b. Unicast
- c. Multicast
- d. Any of the above

The correct **answer** is b

258. What is the hexadecimal equivalent of the Ethernet address 01011010 00010001 01010101 00011000 10101010 00001111?

- a. 5A-11-55-18-AA-0F
- b. 5A-88-AA-18-55-F0
- c. 5A-81-BA-81-AA-0F
- d. 5A-18-5A-18-55-0F

The correct **answer** is a

259. Which of the following could not be an Ethernet source address?

- a. 8A-7B-6C-DE-10-00
- b. 8B-32-21-21-4D-34
- c. EE-AA-C1-23-45-32
- d. 46-56-21-1A-DE-F4

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The correct **answer** is b

260. What is the efficiency of 4B/5B block encoding?

- a. 60 percent
- b. 80 percent
- c. 20 percent
- d. 40 percent

The correct **answer** is b

261. Which of the following could not be an Ethernet unicast destination?

- a. 44-AA-C1-23-45-32
- b. 46-56-21-1A-DE-F4
- c. 48-32-21-21-4D-34
- d. 43-7B-6C-DE-10-00

The correct **answer** is d

262. What is the efficiency of 8B/10B encoding?

- a. 80 percent
- b. 20 percent
- c. 40 percent
- d. 60 percent

The correct **answer** is a

263. A 10-station Ethernet LAN uses a \_\_\_\_\_-port bridge if the effective average data rate for each station is 2 Mbps.

- a. 10
- b. 1
- c. 2
- d. 5

The correct **answer** is d

264. A \_\_\_\_\_-station Ethernet LAN uses a four-port bridge. Each station has an effective average data rate of 1.25 Mbps.

- a. 160
- b. 80
- c. 40
- d. 32

The correct **answer** is d

265. An 80-station traditional Ethernet is divided into four collision domains. This means that a maximum of \_\_\_\_\_ stations contend for medium access at any one time.

- a. 20
- b. 76
- c. 80
- d. 320

The correct **answer** is a

266. If an Ethernet destination address is 07-01-02-03-04-05, then this is a \_\_\_\_\_ address.

- a. Unicast
- b. Broadcast
- c. Multicast
- d. Any of the above

The correct **answer** is c

267. What is the efficiency of a frame in half-duplex Gigabit Ethernet carrying 46 bytes of data?

- a. 97 percent
- b. 70 percent
- c. 56 percent
- d. 12 percent

The correct **answer** is b

268. Which of the following could not be an Ethernet multicast destination?

- a. B7-7B-6C-DE-10-00
- b. 7C-56-21-1A-DE-F4

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- c. 7B-AA-C1-23-45-32
- d. 83-32-21-21-4D-34

The correct **answer** is b

269. Which of the following is a four-wire Gigabit Ethernet implementation?

- a. 1000Base-SX
- b. 1000Base-LX
- c. 1000Base-T
- d. 1000Base-CX

The correct **answer** is c

270. Forty stations are on an Ethernet LAN. A 10-port bridge segments the LAN. What is the effective average data rate of each station?

- a. 1.0 Mbps

- b. 2.5 Mbps
- c. 2.0 Mbps
- d. 5.0 Mbps

The correct **answer** is b

271. A wireless LAN using FHSS hops 10 times per cycle. If the bandwidth of the original signal is 10 MHz and 2 GHz is the lowest frequency, the highest frequency of the system is \_\_\_\_\_ GHz.

- a. 1.0
- b. 2.0
- c. 2.1
- d. 3.0

The correct **answer** is c

272. An FHSS wireless LAN has a spread spectrum of 1 GHz. The bandwidth of the original signal is 250 MHz, and there are \_\_\_\_\_ hops per cycle.

- a. 4
- b. 3
- c. 2
- d. 1

The correct **answer** is a

273. A wireless LAN using FHSS hops 10 times per cycle. If the bandwidth of the original signal is 10 MHz, the spread spectrum is \_\_\_\_\_ MHz.

- a. 1000
- b. 10,000
- c. 10
- d. 100

The correct **answer** is d

274. A wireless LAN using DSSS with an 8-bit chip code needs \_\_\_\_\_ MHz for sending data that originally required a 10-MHz bandwidth.

- a. 20
- b. 80
- c. 2



d. 8

The correct **answer** is b

275. A wireless LAN using DSSS with \_\_\_\_\_-bit chip code needs 320 MHz for sending data that originally required a 20-MHz bandwidth.

a. A 2

b. A 16

c. A 32

d. An 8

The correct **answer** is b

276. A wireless LAN using DSSS with a 4-bit chip code needs 10 MHz for sending data that originally required a \_\_\_\_\_-MHz bandwidth.

a. 20

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b. 25

c. 40

d. 2.5

The correct **answer** is d

277. In an ESS the \_\_\_\_\_ station is not mobile.

a. BSS

b. AP

c. Server

d. None of the above

The correct **answer** is b

278. In an ESS the \_\_\_\_\_ stations are part of a wired LAN.

a. BSS

b. AP

c. Server

d. All the above

The correct **answer** is b

279. A station with \_\_\_\_\_ mobility is either stationary or moving only inside a BSS.

a. No-transition

- b. BSS
- c. ESS
- d. (a) and (b)

The correct **answer** is a

280. \_\_\_\_\_ combine to form a scatternet.

- a. APs
- b. Piconets
- c. BSSs
- d. ESSs

The correct **answer** is b

281. Bluetooth uses \_\_\_\_\_ in the physical layer.

- a. DSSS
- b. DHSS
- c. FHSS
- d. OFDM

The correct **answer** is c

282. A \_\_\_\_\_ frame usually precedes a CTS frame.

- a. SIFS
- b. RTS
- c. DIFS
- d. Any of the above

The correct **answer** is b

283. A station with \_\_\_\_\_ mobility can move from one BSS to another.

- a. No-transition
- b. ESS-transition
- c. BSS-transition
- d. (b) and (c)

The correct **answer** is c

284. A station with \_\_\_\_\_ mobility can move from one ESS to another.

- a. No-transition
- b. ESS-transition
- c. BSS-transition

d. (b) and (c)

The correct **answer** is b

285. A \_\_\_\_\_ frame usually precedes an RTS frame.

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a. DIFS

b. CIFS

c. CTS

d. None of the above

The correct **answer** is d

286. Wireless transmission is \_\_\_\_\_ prone to error than/as wired transmission.

a. Less

b. More

c. Half as

d. None of the above

The correct **answer** is b

287. Which MAC sublayer does IEEE 802.11 define?

a. LLC

b. PCF

c. DCF

d. (b) and (c)

The correct **answer** is d

288. What is the basic access method for wireless LANs as defined by IEEE 802.11?

a. LLC

b. PCF

c. DCF

d. BFD

The correct **answer** is c

289. The access method for wireless LANs as defined by IEEE 802.11 is based on \_\_\_\_\_.

a. Token passing

b. CSMA

c. CSMA/CD

d. CSMA/CA

The correct **answer** is d

290. FHSS, DSSS, and OFDM are \_\_\_\_\_ layer specifications.

a. Data link

b. Network

c. Physical

d. Transport

The correct **answer** is c

291. Stations do not sense the medium during \_\_\_\_\_ time.

a. SIFS

b. NAV

c. RTS

d. CTS

The correct **answer** is b

292. A Bluetooth frame needs \_\_\_\_\_  $\mu$ s for hopping and control mechanisms.

a. 3

b. 625

c. 259

d. A multiple of 259

The correct **answer** is c

293. In the \_\_\_\_\_ method, the sender hops from frequency to frequency in a specific order.

a. DSSS

b. FHSS

c. OFDM

d. HR-DSSS

The correct **answer** is b

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294. A wireless LAN uses \_\_\_\_\_ frames for acknowledgment.

a. Management

b. Data

c. Control

d. None of the above

The correct **answer** is c

295. A wireless LAN uses \_\_\_\_\_ frames for the initial communication between stations and the access points.

- a. Control
- b. Data
- c. Management
- d. None of the above

The correct **answer** is c

296. A Bluetooth network can have \_\_\_\_\_ master(s).

- a. One
- b. Two
- c. Three
- d. Eight

The correct **answer** is a

297. A bridge forwards or filters a frame by comparing the information in its address table to the frame's \_\_\_\_\_.

- a. Source node's physical address
- b. Layer 2 destination address
- c. Layer 2 source address
- d. Layer 3 destination address

The correct **answer** is b

298. Repeaters function in the \_\_\_\_\_ layer(s).

- a. Network
- b. Physical (MAC)
- c. Data link
- d. (a) and (b)

The correct **answer** is b

299. A \_\_\_\_\_ is actually a multiport repeater.

- a. Hub
- b. Bridge
- c. Router
- d. VLAN

The correct **answer** is a

300. A repeater takes a weakened or corrupted signal and \_\_\_\_\_ it.

- a. Resamples
- b. Reroutes
- c. Amplifies
- d. Regenerates

The correct **answer** is d

301. A bridge has access to the \_\_\_\_\_ address of a station on the same network.

- a. Network
- b. Service access point
- c. Physical (MAC)
- d. All the above

The correct **answer** is c

302. The bridge with the least-cost path between the LAN and the root bridge is called the \_\_\_\_\_ bridge.

- a. Forwarding
- b. Designated
- c. Blocking
- d. (a) and (b)

The correct **answer** is b

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303. A system with redundant bridges might have a problem with \_\_\_\_\_ in the system.

- a. Filters
- b. Spanning trees
- c. Loops
- d. All the above

The correct **answer** is c

304. Bridges function in the \_\_\_\_\_ layer(s).

- a. Physical (MAC)
- b. Data link
- c. Network
- d. (a) and (b)

The correct **answer** is d

305. In a VLAN, stations are separated into groups by \_\_\_\_\_.

- a. Software methods
- b. Location
- c. Physical methods
- d. Switches

The correct **answer** is a

306. A bridge can \_\_\_\_\_.

- a. Filter a frame
- b. Forward a frame
- c. Extend a LAN
- d. Do all the above

The correct **answer** is d

307. A \_\_\_\_\_ bridge has the smallest ID.

- a. Designated
- b. Forwarding
- c. Blocking
- d. Root

The correct **answer** is d

308. A bridge never forwards frames out of the \_\_\_\_\_ port.

- a. Root
- b. Designated
- c. Blocking
- d. Forwarding

The correct **answer** is c

309. Which type of bridge builds and updates its tables from address information on frames?

- a. Transparent
- b. Simple
- c. (a) and (b)
- d. None of the above

The correct **answer** is a

310. VLAN technology divides a LAN into \_\_\_\_\_ groups.

- a. Multiplexed
- b. Framed
- c. Physical

d. Logical

The correct **answer** is d

311. Which of the following is a connecting device?

a. Bridge

b. Repeater

c. Hub

d. All the above

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The correct **answer** is d

312. Which station characteristic can be used to group stations into a VLAN?

a. Port numbers

b. MAC addresses

c. IP addresses

d. All the above

The correct **answer** is d

313. \_\_\_\_\_ is a first-generation cellular phone system.

a. GSM

b. IS-95

c. AMPS

d. D-AMPS

The correct **answer** is c

314. AMPS uses \_\_\_\_\_ for modulation.

a. FM

b. FSK

c. PM

d. (a) and (b)

The correct **answer** is d

315. \_\_\_\_\_ separates the AMPS voice channels.

a. CDMA

b. TDMA

c. FDMA

d. (b) and (c)

The correct **answer** is c



316. \_\_\_\_\_ is a cellular telephone system popular in Europe.

- a. GSM
- b. D-AMPS
- c. IS-95
- d. AMPS

The correct **answer** is a

317. D-AMPS uses \_\_\_\_\_ for multiplexing.

- a. CDMA
- b. TDMA
- c. FDMA
- d. (b) and (c)

The correct **answer** is d

318. GSM uses \_\_\_\_\_ for multiplexing.

- a. CDMA
- b. TDMA
- c. FDMA
- d. (b) and (c)

The correct **answer** is d

319. DSSS is used by the \_\_\_\_\_ cellular phone system.

- a. AMPS
- b. IS-95
- c. D-AMPS
- d. GSM

The correct **answer** is b

320. \_\_\_\_\_ base stations use GPS for synchronization.

- a. GSM
- b. IS-95
- c. AMPS

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- d. D-AMPS

The correct **answer** is b

321. \_\_\_\_\_ will have 288 satellites in 12 polar orbits.

- a. Teledesic
- b. Globalstar

- c. Iridium
- d. GPS

The correct **answer** is a

322. IS-95 has a frequency reuse factor of \_\_\_\_\_.

- a. 7
- b. 95
- c. 1
- d. 5

The correct **answer** is c

323. The path that a satellite makes around the world is called \_\_\_\_\_.

- a. An orbit
- b. A period
- c. A footprint
- d. An uplink

The correct **answer** is a

324. A GEO satellite has \_\_\_\_\_ orbit.

- a. A polar
- b. An inclined
- c. An equilateral
- d. An equatorial

The correct **answer** is d

325. Which orbit has the highest altitude?

- a. LEO
- b. GEO
- c. MEO
- d. HEO

The correct **answer** is b

326. \_\_\_\_\_ is a second-generation cellular phone system.

- a. D-AMPS
- b. GSM
- c. IS-95
- d. All the above

The correct **answer** is d

327. A \_\_\_\_\_ is a computerized center that is responsible for connecting calls, recording call information, and billing.

- a. Cell
- b. Mobile station
- c. Base station
- d. Mobile switching center

The correct **answer** is d

328. \_\_\_\_\_ has 48 satellites in six polar orbits.

- a. Iridium
- b. Teledesic
- c. Globalstar
- d. GPS

The correct **answer** is c

329. The signal from a satellite is aimed at a specific area called the \_\_\_\_\_.

- a. Orbit
- b. Period

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- c. Footprint
- d. Uplink

The correct **answer** is c

330. In \_\_\_\_\_, a mobile station always communicates with just one base station.

- a. Roaming
- b. A roaming handoff
- c. A hard handoff
- d. A soft handoff

The correct **answer** is c

331. MEO satellites orbit \_\_\_\_\_ Van Allen belts.

- a. In the
- b. Above both
- c. Below both
- d. Between the

The correct **answer** is d

332. \_\_\_\_\_ is often used for navigation purposes.

- a. GPS
- b. AMPS
- c. IS-95
- d. Iridium

The correct **answer** is a

333. An LEO satellite has \_\_\_\_\_ orbit.

- a. An equatorial
- b. A polar
- c. An inclined
- d. All the above

The correct **answer** is b

334. Teledesic is a \_\_\_\_\_ LEO satellite system.

- a. Passband
- b. Broadband
- c. Little
- d. Big

The correct **answer** is b

335. \_\_\_\_\_ has 66 satellites in six LEOs.

- a. Globalstar
- b. Teledesic
- c. GPS
- d. Iridium

The correct **answer** is d

336. Transmission from the Earth to the satellite is called the \_\_\_\_\_.

- a. Downlink
- b. Uplink
- c. Footlink
- d. Up print

The correct **answer** is b

337. The \_\_\_\_\_ is not used for voice communication.

- a. GPS
- b. Iridium system
- c. IS-95 system

d. Globalstar system

The correct **answer** is a

338. \_\_\_\_\_ is a Frame Relay option that transmits voice through the network.

a. LMI

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b. FRAD

c. VOFR

d. DLCI

The correct **answer** is c

339. Frame Relay provides \_\_\_\_\_ connections.

a. PVC

b. SVC

c. (a) and (b)

d. None of the above

The correct **answer** is c

340. Routing and switching in Frame Relay are performed by the \_\_\_\_\_ layer.

a. Physical

b. Network

c. Data link

d. (b) and (c)

The correct **answer** is c

341. Frame Relay is unsuitable for \_\_\_\_\_ due to possible delays in transmission resulting from variable frame sizes.

a. File transfers

b. Real-time video

c. Fixed-rate data communication

d. All the above

The correct **answer** is b

342. The Frame Relay address field is \_\_\_\_\_ in length.

a. 4 bytes

b. 2 bytes

c. 3 bytes

d. Any of the above

The correct **answer** is d

343. Because ATM \_\_\_\_\_, which means that cells follow the same path, the cells do not usually arrive out of order.

a. Is asynchronous

b. Uses virtual circuit routing

c. Is multiplexed

d. Is a network

The correct **answer** is b

344. \_\_\_\_\_ is a protocol to control and manage interfaces in Frame Relay networks.

a. FRAD

b. DLCI

c. LMI

d. VOFR

The correct **answer** is c

345. Frame Relay operates in the \_\_\_\_\_.

a. Physical and data link layers

b. Physical, data link, and network layers

c. Physical layer

d. Data link layer

The correct **answer** is a

346. In the data link layer, Frame Relay uses \_\_\_\_\_.

a. A simplified HDLC protocol

b. LAPB

c. BSC protocol

d. Any ANSI standard protocol

The correct **answer** is a

347. The VPI of an NNI is \_\_\_\_\_ bits in length.

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a. 16

b. 8

c. 12

d. 24

The correct **answer** is c

348. In data communications, ATM is an acronym for \_\_\_\_\_.

- a. Automated Teller Machine
- b. Automatic Transmission Model
- c. Asynchronous Transfer Mode
- d. Asynchronous Telecommunication Method

The correct **answer** is c

349. Which AAL type is designed to support SEAL?

- a. AAL1
- b. AAL2
- c. AAL3/4
- d. AAL5

The correct **answer** is d

350. Which layer in ATM protocol reformats the data received from other networks?

- a. Physical
- b. Application adaptation
- c. Data adaptation
- d. ATM

The correct **answer** is b

351. Which layer in ATM protocol has a 53-byte cell as an end product?

- a. ATM
- b. Application adaptation
- c. Physical
- d. Cell transformation

The correct **answer** is a

352. Which AAL type is designed to support a data stream that has a constant bit rate?

- a. AAL1
- b. AAL2
- c. AAL3/4
- d. AAL5

The correct **answer** is a

353. The VPI of a UNI is \_\_\_\_\_ bits in length.

- a. 12
- b. 16
- c. 24
- d. 8

The correct **answer** is d

354. In an ATM network, all cells belonging to a single message follow the same \_\_\_\_\_ and remain in their original order until they reach their destination.

- a. Virtual circuit
- b. Transmission path
- c. Virtual path
- d. None of the above

The correct **answer** is a

355. A device called a(n) \_\_\_\_\_ allows frames from an ATM network to be transmitted across a Frame Relay network.

- a. FRAD
- b. LMI
- c. VOFR
- d. DLCI

The correct **answer** is a

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356. A \_\_\_\_\_ provides a connection or a set of connections between switches.

- a. Transmission path
- b. Virtual circuit
- c. Virtual path
- d. None of the above

The correct **answer** is b

357. A \_\_\_\_\_ is the physical connection between an endpoint and a switch or between two switches.

- a. Virtual path
- b. Transmission path
- c. Virtual circuit



d. None of the above

The correct **answer** is b

358. On a network that uses NAT, the \_\_\_\_\_ has a translation table.

a. Router

b. Switch

c. Server

d. None of the above

The correct **answer** is a

359. Identify the class of IP address 229.1.2.3.

a. Class A

b. Class B

c. Class C

d. Class D

The correct **answer** is d

360. On a network that uses NAT, \_\_\_\_\_ initiates the communication.

a. An internal host

b. An external host

c. The router

d. (a) or (b)

The correct **answer** is a

361. A subnet mask in class B can have \_\_\_\_\_ 1s with the remaining bits 0s.

a. Nine

b. Seventeen

c. Three

d. Fourteen

The correct **answer** is b

362. A subnet mask in class C can have \_\_\_\_\_ 1s with the remaining bits 0s.

a. Twenty-five

b. Twelve

c. Seven

d. Ten

The correct **answer** is a

363. Identify the class of IP address 4.5.6.7.

- a. Class A
- b. Class B
- c. Class C
- d. Class D

The correct **answer** is a

364. Identify the class of IP address 191.1.2.3.

- a. Class A
- b. Class B
- c. Class C
- d. Class D

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The correct **answer** is b

365. A subnet mask in class A can have \_\_\_\_\_ 1s with the remaining bits 0s.

- a. Nine
- b. Four
- c. Thirty-three
- d. Three

The correct **answer** is a

366. Class \_\_\_\_\_ has the greatest number of hosts per given network address.

- a. A
- b. B
- c. C
- d. D

The correct **answer** is a

367. A subnet mask in class B has nineteen 1s. How many subnets does it define?

- a. 128
- b. 8
- c. 32
- d. 64

The correct **answer** is b

368. In \_\_\_\_\_ routing, the full IP address of a destination is given in the routing table.

- a. Next-hop
- b. Host-specific
- c. Network-specific
- d. Default

The correct **answer** is b

369. A subnet mask in class C has twenty-five 1s. How many subnets does it define?

- a. 0
- b. 2
- c. 8
- d. 16

The correct **answer** is b

370. Given the IP address 180.25.21.172 and the subnet mask 255.255.192.0, what is the subnet address?

- a. 180.25.21.0
- b. 180.25.8.0
- c. 180.25.0.0
- d. 180.0.0.0

The correct **answer** is c

371. Given the IP address 18.250.31.14 and the subnet mask 255.240.0.0, what is the subnet address?

- a. 18.9.0.14
- b. 18.0.0.14
- c. 18.31.0.14
- d. 18.240.0.0

The correct **answer** is d

372. \_\_\_\_\_ is a client-server program that provides an IP address, subnet mask, IP address of a router, and IP address of a name server to a computer.

- a. NAT
- b. DHCP

- c. CIDR
- d. ISP

The correct **answer** is b

373. In \_\_\_\_\_, each packet of a message need not follow the same path from sender to receiver.

- a. The virtual approach to packet switching
- b. The datagram approach to packet switching

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- c. Message switching
- d. None of the above

The correct **answer** is b

374. An IP address consists of \_\_\_\_\_ bits.

- a. 8
- b. 32
- c. 4
- d. Any of the above

The correct **answer** is b

375. On a network that uses NAT, the router can use \_\_\_\_\_ global address(es).

- a. A pool of
- b. One
- c. Two
- d. None of the above

The correct **answer** is a

376. In \_\_\_\_\_ routing, the mask and destination addresses are both 0.0.0.0 in the routing table.

- a. Default
- b. Next-hop
- c. Network-specific
- d. Host-specific

The correct **answer** is a

377. A subnet mask in class A has fourteen 1s. How many subnets does it define?

- a. 64

- b. 128
- c. 32
- d. 8

The correct **answer** is a

378. In which type of switching do all the packets of a message follow the same channels of a path?

- a. Virtual circuit packet switching
- b. Message switching
- c. Datagram packet switching
- d. None of the above

The correct **answer** is a

379. In \_\_\_\_\_ routing, the destination address is a network address in the routing table.

- a. Network-specific
- b. Host-specific
- c. Next-hop
- d. Default

The correct **answer** is a

380. Given the IP address 201.14.78.65 and the subnet mask 255.255.255.224, what is the subnet address?

- a. 201.14.78.64
- b. 201.14.78.32
- c. 201.14.78.65
- d. 201.14.78.12

The correct **answer** is a

381. In error reporting the encapsulated ICMP packet goes to \_\_\_\_\_.

- a. The receiver
- b. A router
- c. The sender
- d. Any of the above

The correct **answer** is c

382. When the hop-count field reaches zero and the destination has not been reached, a \_\_\_\_\_ error message is sent.

- a. Destination-unreachable

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- b. Redirection
- c. Time-exceeded
- d. Parameter-problem

The correct **answer** is c

383. An ARP request is \_\_\_\_\_ to \_\_\_\_\_.

- a. Multicast; one host
- b. Unicast; all hosts
- c. Broadcast; all hosts
- d. Unicast; one host

The correct **answer** is c

384. What is the maximum size of the data portion of the IP datagram?

- a. 65,515 bytes
- b. 65,535 bytes
- c. 65,475 bytes
- d. 65,460 bytes

The correct **answer** is a

385. A best-effort delivery service such as IP does not include \_\_\_\_\_.

- a. Error correction
- b. Error checking
- c. Datagram acknowledgment
- d. All the above

The correct **answer** is d

386. An HLEN value of decimal 10 means \_\_\_\_\_.

- a. There is 10 bytes of options
- b. There is 40 bytes in the header
- c. There is 40 bytes of options
- d. There is 10 bytes in the header

The correct **answer** is b

387. In IPv4, what is the value of the total length field in bytes if the header is 28 bytes and the data field is 400 bytes?

- a. 407
- b. 107

- c. 428
- d. 427

The correct **answer** is c

388. If the fragment offset has a value of 100, it means that \_\_\_\_\_.

- a. The first byte of the datagram is byte 800
- b. The datagram has not been fragmented
- c. The datagram is 100 bytes in size
- d. The first byte of the datagram is byte 100

The correct **answer** is a

389. What is needed to determine the number of the last byte of a fragment?

- a. Identification number
- b. Offset number
- c. Total length
- d. (b) and (c)

The correct **answer** is d

390. The IP header size \_\_\_\_\_.

- a. Depends on the MTU
- b. Is 20 to 60 bytes long
- c. Is 20 bytes long
- d. Is 60 bytes long

The correct **answer** is b

391. If a host needs to synchronize its clock with another host, it sends a \_\_\_\_\_ message.

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- a. Time-exceeded
- b. Time-stamp-request
- c. Source-quench
- d. Router-advertisement

The correct **answer** is b

392. Which of the following is a necessary part of the IPv6 datagram?

- a. Base header
- b. Extension header

- c. Data packet from the upper layer
- d. (a) and (c)

The correct **answer** is d

393. \_\_\_\_\_ is a dynamic mapping protocol in which a physical address is found for a given IP address.

- a. RARP
- b. ICMP
- c. ARP
- d. None of the above

The correct **answer** is c

394. A router reads the \_\_\_\_\_ address on a packet to determine the next hop.

- a. MAC
- b. Source
- c. IP
- d. ARP

The correct **answer** is c

395. The target hardware address on an Ethernet is \_\_\_\_\_ in an ARP request.

- a. Variable
- b. Class-dependent
- c. 0x000000000000
- d. 0.0.0.0

The correct **answer** is c

396. When not all fragments of a message have been received within the designated amount of time, a \_\_\_\_\_ error message is sent.

- a. Time-exceeded
- b. Parameter-problem
- c. Source-quench
- d. Time-stamp-request

The correct **answer** is a

397. A \_\_\_\_\_ can learn about network \_\_\_\_\_ by sending out a router-solicitation packet.



- a. Router; routers
- b. Router; hosts
- c. Host; routers
- d. Host; hosts

The correct **answer** is c

398. Which of the following types of ICMP messages needs to be encapsulated into an IP datagram?

- a. Time-exceeded
- b. Multicasting
- c. Echo reply
- d. All the above

The correct **answer** is d

399. The purpose of echo request and echo reply is to \_\_\_\_\_.

- a. Report errors
- b. Check packet lifetime
- c. Check node-to-node communication
- d. Find IP addresses

The correct **answer** is c

### **A.K presentaon**

400. An ARP reply is \_\_\_\_\_ to \_\_\_\_\_.

- a. Unicast; one host
- b. Broadcast; all hosts
- c. Multicast; one host
- d. Unicast; all hosts

The correct **answer** is a

401. One method to alert a source host of congestion is the \_\_\_\_\_ message.

- a. Source-quench
- b. Redirection
- c. Echo-request
- d. Destination-unreachable

The correct **answer** is a

402. A time-exceeded message is generated if \_\_\_\_\_.

- a. The round-trip time between hosts is close to zero

- b. The time-to-live field has a zero value
- c. Fragments of a message do not arrive within a set time
- d. (b) and (c)

The correct **answer** is d

403. To determine whether a node is reachable, \_\_\_\_\_ message can be sent.

- a. An echo-request
- b. An echo-reply
- c. A redirection
- d. A source-quench

The correct **answer** is a

404. In IPv6, the \_\_\_\_\_ field in the base header restricts the lifetime of a datagram.

- a. Version
- b. Hop limit
- c. Priority
- d. Next-header

The correct **answer** is b

405. In IPv4, what is the length of the data field given an HLEN value of 12 and total length value of 40,000?

- a. 39,952
- b. 39,988
- c. 40,012
- d. 40,048

The correct **answer** is a

406. A datagram is fragmented into three smaller datagrams. Which of the following is true?

- a. The do not fragment bit is set to 1 for all three datagrams.
- b. The identification field is the same for all three datagrams.
- c. The more fragment bit is set to 0 for all three datagrams.
- d. The offset field is the same for all three datagrams.

The correct **answer** is b

407. Errors in the header or option fields of an IP datagram require a \_\_\_\_\_ error message.

- a. Source-quench
- b. Parameter-problem
- c. Router-solicitation
- d. Redirection

The correct **answer** is b

408. The cost field of a router's first table from itself always has a value of \_\_\_\_\_.

- a. Some positive integer
- b. 0
- c. 1

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- d. Infinity

The correct **answer** is b

409. A routing table contains \_\_\_\_\_.

- a. The destination network ID
- b. The hop count to reach the network
- c. The router ID of the next hop
- d. All the above

The correct **answer** is d

410. Router B receives an update from router A that indicates Net1 is two hops away. The next update from A says Net1 is five hops away. What value is entered in B's routing table for Net1? Assume the basic RIP is being used.

- a. 6
- b. 7
- c. 2
- d. 3

The correct **answer** is a

411. If the routing table contains four new entries, how many update messages must the router send to its one neighbor router?

- a. 3
- b. 4
- c. 1
- d. 2

The correct **answer** is c

412. An area border router can be connected to \_\_\_\_\_.

- a. Only another router
- b. Only another network
- c. Only another area border router
- d. Another router or another network

The correct **answer** is d

413. Which of the following usually has the least number of connections to other areas?

- a. A transient link
- b. A stub link
- c. An area
- d. An autonomous system

The correct **answer** is b

414. \_\_\_\_\_ is used in a dense multicast environment while \_\_\_\_\_ is used in a sparse multicast environment.

- a. PIM-SM; PIM-DM
- b. PIM; PIM-DM
- c. PIM; PIM-SM
- d. PIM-DM; PIM-SM

The correct **answer** is d

415. When a multicast router is not directly connected to another multicast router, a \_\_\_\_\_ can be formed to connect the two.

- a. Logical core
- b. Spanning tree
- c. Physical tunnel
- d. Logical tunnel

The correct **answer** is d

416. Which type of network using the OSPF protocol can have five routers attached to it?

- a. Transient
- b. Stub
- c. Point-to-point
- d. All the above

The correct **answer** is a

417. A WAN using the OSPF protocol that connects two routers is an example of a \_\_\_\_\_ type of OSPF network.

a. Stub

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b. Point-to-point

c. Transient

d. Virtual

The correct **answer** is b

418. If four hosts on a network belong to the same group, a total of \_\_\_\_\_ sent in

a. One membership report is

b. Two membership reports are

c. Three membership reports are

d. Four membership reports are

The correct **answer** is b

419. A one-to-all communication between a source and all hosts on a network is classified as a \_\_\_\_\_ communication.

a. Unicast

b. Multicast

c. Broadcast

d. (a) and (b)

The correct **answer** is c

420. Which type of BGP message announces a route to a new destination?

a. Update

b. Open

c. Keep-alive

d. Notification

The correct **answer** is a

421. Which layer produces the OSPF message?

a. Data link

b. Transport

c. Application

d. Network

The correct **answer** is d

422. Which of the following is an exterior routing protocol?

- a. RIP
- b. OSPF
- c. BGP
- d. (a) and (b)

The correct **answer** is c

423. An area is \_\_\_\_\_.

- a. Composed of at least two ASs
- b. Another term for an internet
- c. Part of an AS
- d. A collection of stub areas

The correct **answer** is c

424. In an autonomous system with n areas, how many areas are connected to the backbone?

- a. 1
- b. n
- c.  $n - 1$
- d.  $n + 1$

The correct **answer** is c

425. Which of the following is an interior routing protocol?

- a. RIP
- b. OSPF
- c. BGP
- d. (a) and (b)

The correct **answer** is d

426. OSPF is based on \_\_\_\_\_.

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- a. Distance vector routing
- b. Path vector routing
- c. Link state routing
- d. (a) and (b)

The correct **answer** is c

427. BGP is based on \_\_\_\_\_.

- a. Distance vector routing
- b. Link state routing
- c. Path vector routing
- d. (a) and (b)

The correct **answer** is c

428. Which type of BGP message creates a relationship between two routers?

- a. Keep-alive
- b. Open
- c. Update
- d. Notification

The correct **answer** is b

429. Which type of network using the OSPF protocol always consists of just two connected routers?

- a. Transient
- b. Stub
- c. Point-to-point
- d. Virtual

The correct **answer** is c

430. Which type of network using the OSPF protocol is the result of a break in a link between two routers?

- a. Virtual
- b. Point-to-point
- c. Transient
- d. Stub

The correct **answer** is a

431. Which type of BGP message is sent by a router to close a connection?

- a. Open
- b. Update
- c. Notification
- d. Keep-alive

The correct **answer** is c

432. An IGMP query is sent from a \_\_\_\_\_ to a \_\_\_\_\_.

- a. Router; host or router
- b. Host; host
- c. Host; router
- d. Router; router

The correct **answer** is a

433. Which type of BGP message is sent by a system to notify another router of the sender's existence?

- a. Keep-alive
- b. Notification
- c. Open
- d. Update

The correct **answer** is a

434. An Ethernet LAN using the OSPF protocol with five attached routers can be called a \_\_\_\_\_ network.

- a. Point-to-point
- b. Stub
- c. Transient
- d. Virtual

The correct **answer** is c

### **A.K presentaon**

435. In distance vector routing each router receives information directly from \_\_\_\_\_.

- a. Its neighbors only
- b. Every router on the network
- c. Every router less than two units away
- d. A table stored by the network hosts

The correct **answer** is a

436. A system uses group-shared trees for multicasting. If there are 100 sources and 5 groups, there is a maximum of \_\_\_\_\_ different trees.

- a. 20
- b. 100
- c. 5



d. 500

The correct **answer** is c

437. \_\_\_\_\_ is a multicast routing protocol using source-based trees.

a. DVRMP

b. MOSPF

c. CBT

d. (a) and (b)

The correct **answer** is d

438. Pruning and grafting are strategies used in \_\_\_\_\_.

a. RPM

b. RPF

c. RPB

d. All the above

The correct **answer** is a

439. In distance vector routing a router sends out information \_\_\_\_\_.

a. Only when there is a change in its table

b. Only when a new host is added

c. At regularly scheduled intervals

d. Only when a new network is added

The correct **answer** is c

440. The \_\_\_\_\_ field of the IGMP message is all zeros in a query message.

a. Version

b. Type

c. Group address

d. Checksum

The correct **answer** is c

441. The \_\_\_\_\_ field of the IGMP message is 0x11 for a query message.

a. Version

b. Type

c. Checksum

d. d. (a) and (b)

The correct **answer** is d

442. A one-to-many communication between a source and a specific group of hosts is classified as a \_\_\_\_\_ communication.

- a. Multicast
- b. Unicast
- c. Broadcast
- d. (a) and (b)

The correct **answer** is a

443. A one-to-one communication between a source and one destination is classified as a \_\_\_\_\_ communication.

- a. Unicast
- b. Multicast
- c. Broadcast
- d. d. (a) and (b)

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The correct **answer** is a

444. \_\_\_\_\_ is a multicasting application.

- a. Teleconferencing
- b. Distance learning
- c. Information dissemination
- d. All the above

The correct **answer** is d

445. A \_\_\_\_\_ is a data structure with nodes and edges and a hierarchical structure.

- a. Graph
- b. Leaf
- c. Tree
- d. Root

The correct **answer** is c

446. A system uses source-based trees for multicasting. If there are 100 sources and 5 groups, there is a maximum of \_\_\_\_\_ different trees.

- a. 5
- b. 20

- c. 100
- d. 500

The correct **answer** is d

447. In a \_\_\_\_\_ tree approach to multicasting, the combination of source and group determines the tree.

- a. Shortest-group
- b. Source-based
- c. Spanning-source
- d. Group-shared

The correct **answer** is b

448. In a \_\_\_\_\_ tree approach to multicasting, the group determines the tree.

- a. Group-shared
- b. Spanning-source
- c. Shortest-group
- d. Source-based

The correct **answer** is a

449. \_\_\_\_\_ is a multicast routing protocol using group-shared trees.

- a. DVRMP
- b. MOSPF
- c. CBT
- d. (a) and (b)

The correct **answer** is c

450. In \_\_\_\_\_ a network can receive a multicast packet from a particular source only through a designated parent router.

- a. RPF
- b. RPM
- c. RPB
- d. All the above

The correct **answer** is c

451. Dijkstra's algorithm is used to \_\_\_\_\_.

- a. Create LSAs
- b. Flood an internet with information
- c. Create a link state database

d. Calculate the routing tables

The correct **answer** is d

452. A \_\_\_\_\_ message tells an upstream router to stop sending multicast messages for a specific group through a specific router.

a. Graft

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b. Prune

c. Weed

d. Plum

The correct **answer** is b

453. The \_\_\_\_\_ is used by a router in response to a received-leave report.

a. Special query message

b. General query message

c. Membership report

d. Leave report

The correct **answer** is a

454. RIP is based on \_\_\_\_\_.

a. Link state routing

b. Dijkstra's algorithm

c. Path vector routing

d. Distance vector routing

The correct **answer** is d

455. A \_\_\_\_\_ message tells an upstream router to start sending multicast messages for a specific group through a specific router.

a. Weed

b. Prune

c. Plum

d. Graft

The correct **answer** is d

456. \_\_\_\_\_ uses multicast link state routing concepts to create source-based trees.

- a. DVMRP
- b. CBT
- c. BVD
- d. MOSPF

The correct **answer** is d

457. In the \_\_\_\_\_ protocol, a multicast packet is encapsulated inside a unicast packet with the core router as the destination.

- a. DVMRP
- b. CBT
- c. MOSPF
- d. BVD

The correct **answer** is b

458. The \_\_\_\_\_ is an IGMP message.

- a. Query message
- b. Membership report
- c. Leave report
- d. All the above

The correct **answer** is d

459. The \_\_\_\_\_ defines the client program.

- a. Well-known port number
- b. Ephemeral port number
- c. IP address
- d. Physical address

The correct **answer** is b

460. The \_\_\_\_\_ timer is used in the termination phase.

- a. Retransmission
- b. Time-waited
- c. Persistence
- d. Keep-alive

The correct **answer** is b

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461. Which is a legal port address?

- a. 0
- b. 513

- c. 65,535
- d. All the above

The correct **answer** is d

462. The definition of reliable delivery includes \_\_\_\_\_.

- a. Error-free delivery
- b. Receipt of the complete message
- c. In-order delivery
- d. All the above

The correct **answer** is d

463. Which of the following does UDP guarantee?

- a. Acknowledgments to the sender
- b. Flow control
- c. Sequence numbers on each user datagram
- d. None of the above

The correct **answer** is d

464. The source port address on the UDP user datagram header defines \_\_\_\_\_.

- a. The sending computer
- b. The receiving computer
- c. The application program on the receiving computer
- d. The application program on the sending computer

The correct **answer** is d

465. A host can be identified by \_\_\_\_\_ while a program running on the host can be identified by \_\_\_\_\_.

- a. A port number; an IP address
- b. An IP address; a port number
- c. An IP address; a host address
- d. An IP address; a well-known port

The correct **answer** is b

466. Which of the following is not part of the UDP user datagram header?

- a. Source port address
- b. Checksum
- c. Length of header

d. Destination port address

The correct **answer** is c

467. The \_\_\_\_\_ defines the server program.

a. IP address

b. Well-known port number

c. Ephemeral port number

d. Physical address

The correct **answer** is b

468. IP is responsible for \_\_\_\_\_ communication while TCP is responsible for \_\_\_\_\_ communication.

a. Process-to-process; node-to-node

b. Host-to-host; process-to-process

c. Process-to-process; host-to-host

d. Node-to-node; process-to-process

The correct **answer** is b

469. The \_\_\_\_\_ timer is needed to handle the zero window-size advertisement.

a. Persistence

b. Keep-alive

c. Retransmission

d. Time-waited

The correct **answer** is a

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470. Connection establishment involves a \_\_\_\_\_ handshake.

a. Three-way

b. One-way

c. Two-way

d. None of the above

The correct **answer** is a

471. A special segment called a probe is sent by a sending TCP when the \_\_\_\_\_ timer goes off.

a. Persistence

b. Transmission

c. Keep-alive

d. Time-waited

The correct **answer** is a

472. The \_\_\_\_\_ address uniquely identifies a running application program.

a. IP address

b. NIC

c. Socket

d. Host

The correct **answer** is c

473. The \_\_\_\_\_ field is used to order packets of a message.

a. Sequence number

b. Acknowledgment number

c. Urgent pointer

d. Checksum

The correct **answer** is a

474. The \_\_\_\_\_ field is used for error detection.

a. Sequence number

b. Acknowledgment number

c. Urgent pointer

d. Checksum

The correct **answer** is d

475. Multiply the header length field by \_\_\_\_\_ to find the total number of bytes in the TCP header.

a. 4

b. 6

c. 8

d. 2

The correct **answer** is a

476. Urgent data require the urgent pointer field as well as the URG bit in the \_\_\_\_\_ field.

a. Sequence number

b. Control

c. Offset

d. Reserved



The correct **answer** is b

477. In \_\_\_\_\_, data are sent or processed at a very inefficient rate, such as 1 byte at a time.

- a. Silly window syndrome
- b. Sliding window syndrome
- c. Nagle's syndrome
- d. Delayed acknowledgment

The correct **answer** is a

478. The \_\_\_\_\_ timer keeps track of the time between the sending of a segment and the receipt of an acknowledgment.

- a. Time-waited
- b. Retransmission
- c. Persistence
- d. Keep-alive

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The correct **answer** is b

479. To prevent silly window syndrome created by a receiver that processes data at a very slow rate, \_\_\_\_\_ can be used.

- a. Clark's solution
- b. Nagle's algorithm
- c. Delayed acknowledgment
- d. (a) or (c)

The correct **answer** is d

480. To prevent silly window syndrome created by a sender that sends data at a very slow rate, \_\_\_\_\_ can be used.

- a. Nagle's algorithm
- b. Clark's solution
- c. Delayed acknowledgment
- d. (a) or (c)

The correct **answer** is a

481. An ACK number of 1000 always means that \_\_\_\_\_.

- a. 999 bytes has been successfully received
- b. 1000 bytes has been successfully received
- c. 1001 bytes has been successfully received

d. None of the above

The correct **answer** is d

482. The \_\_\_\_\_ timer prevents a long idle connection between two TCPs.

a. Keep-alive

b. Time-waited

c. Retransmission

d. Persistence

The correct **answer** is a

483. UDP and TCP are both \_\_\_\_\_ layer protocols.

a. Physical

b. Data link

c. Network

d. Transport

The correct **answer** is d

484. Which of the following functions does UDP perform?

a. End-to-end reliable data delivery

b. Process-to-process communication

c. Host-to-host communication

d. All the above

The correct **answer** is b

485. UDP needs the \_\_\_\_\_ address to deliver the user datagram to the correct application program.

a. Application

b. Internet

c. Physical

d. Port

The correct **answer** is d

486. Karn's algorithm is used in calculations by the \_\_\_\_\_ timer.

a. a. Time-waited

b. Retransmission

c. Persistence

d. Keep-alive

The correct **answer** is b

487. Slow start is used in conjunction with \_\_\_\_\_ as a TCP congestion control strategy.

- a. Multiplicative increase
- b. Multiplicative decrease

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- c. Additive increase
- d. Additive decrease

The correct **answer** is c

488. The maximum length of time that traffic is generated at the peak rate is called the \_\_\_\_\_.

- a. Effective bandwidth
- b. Average data rate
- c. Maximum burst size
- d. Constant bit rate

The correct **answer** is c

489. For a system using TCP, the sender window size is determined by the \_\_\_\_\_ window size.

- a. Receiver
- b. Sender
- c. Congestion
- d. (a) and (c)

The correct **answer** is d

490. \_\_\_\_\_ traffic features sudden data rate changes in very short periods of time.

- a. Constant-bit-rate
- b. Bursty
- c. Variable-bit-rate
- d. Peak-bit-rate

The correct **answer** is b

491. When the load is greater than the capacity, the delay \_\_\_\_\_.

- a. Decreases
- b. Goes to infinity
- c. Increases linearly
- d. Goes to zero

The correct **answer** is b

492. \_\_\_\_\_ is a closed-loop mechanism to alleviate congestion.

- a. A choke point
- b. Implicit signaling
- c. Explicit signaling
- d. All the above

The correct **answer** is d

493. The FECN informs the \_\_\_\_\_ of congestion while the BECN informs the \_\_\_\_\_ of congestion.

- a. Sender; destination
- b. Interface; sender
- c. Destination; interface
- d. Destination; sender

The correct **answer** is d

494. The \_\_\_\_\_ is the maximum data rate of the traffic.

- a. Average data rate
- b. Maximum burst size
- c. Effective bandwidth
- d. Peak data rate

The correct **answer** is d

495. \_\_\_\_\_ is a flow characteristic in which the delay varies for packets belonging to the same flow.

- a. Choke point
- b. Additive increase
- c. Jitter
- d. Throughput

The correct **answer** is b

496. In \_\_\_\_\_ queuing the first packet into the queue is the first packet out of the queue.

- a. Priority

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- b. Weighted fair
- c. FIFO
- d. LIFO

The correct **answer** is c

497. In Frame Relay the transmission rate can never exceed \_\_\_\_\_.

- a. Bc
- b. The access rate
- c. Be
- d. CIR

The correct **answer** is b

498. \_\_\_\_\_ measures the variation in cell transmission time.

- a. SCR
- b. CVDT
- c. PCR
- d. MCR

The correct **answer** is b

499. If the SCR is 60,000, the PCR is 70,000, and the MCR is 55,000, what is the minimum number of cells that can be sent per second?

- a. 60,000
- b. 70,000
- c. 55,000
- d. 5000

The correct **answer** is c

500. The \_\_\_\_\_ traffic shaping method gives a host credit for its idle time.

- a. Leaky bucket
- b. Traffic bucket
- c. Token bucket
- d. Bursty bucket

The correct **answer** is c

501. A flow-based QoS model designed for IP is called \_\_\_\_\_.

- a. RSVP
- b. Integrated Services
- c. Differentiated Services
- d. Multicast trees

The correct **answer** is b

502. A signaling protocol that helps IP create a flow is called \_\_\_\_\_.

- a. RSVP
- b. Integrated Services
- c. Differentiated Services
- d. Multicast trees

The correct **answer** is a

503. RSVP uses \_\_\_\_\_ messages.

- a. Path
- b. Resv
- c. Resource
- d. (a) and (b)

The correct **answer** is d

504. In an RSVP reservation style called \_\_\_\_\_ filter, the router creates a single reservation that can be shared by a set of flows.

- a. Fixed
- b. Shared explicit
- c. Wild card
- d. All the above

The correct **answer** is b

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505. Differentiated Services was designed to handle the \_\_\_\_\_ problem associated with Integrated Services.

- a. Stability
- b. Reservation
- c. Scalability
- d. All the above

The correct **answer** is c

506. A \_\_\_\_\_ is a Differentiated Services traffic conditioner.

- a. Meter
- b. Marker
- c. Shaper

The correct **answer** is c

507. What is the relationship between the access rate and the CIR?

- a. CIR plus Be is equal to the access rate.
- b. CIR is always equal to the access rate.
- c. CIR is greater than the access rate.
- d. CIR is less than the access rate.

The correct **answer** is d

508. If the maximum CTD is 10  $\mu$ s and the minimum CTD is 1  $\mu$ s, the \_\_\_\_\_ is 9  $\mu$ s.

- a. CDV
- b. CLR
- c. CTD
- d. CER

The correct **answer** is a

509. A Frame Relay network is committed to transfer \_\_\_\_\_ bps without discarding any frames.

- a. Be
- b. Bc
- c. CIR
- d. (a) and (b)

The correct **answer** is b

510. The effective bandwidth is based on \_\_\_\_\_.

- a. Average data rate
- b. Peak data rate
- c. Maximum burst size
- d. All the above

The correct **answer** is d

511. The cell \_\_\_\_\_ is the difference between the CTD maximum and minimum.

- a. Delay variation
- b. Error ratio
- c. Loss ratio
- d. Transfer delay

The correct **answer** is a

512. The cell \_\_\_\_\_ is the ratio of lost cells to cells sent.

- a. Delay variation

- b. Error ratio
- c. Loss ratio
- d. Transfer delay

The correct **answer** is c

513. The \_\_\_\_\_ service class is particularly suitable for applications with bursty data.

- a. CBR
- b. ABR
- c. VBR
- d. UBR

The correct **answer** is b

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514. The \_\_\_\_\_ service class is suitable for customers who need real-time video transmission without compression.

- a. ABR
- b. CBR
- c. VBR
- d. UBR

The correct **answer** is b

515. The \_\_\_\_\_ is greater than the SCR.

- a. MCR
- b. CVDT
- c. PCR
- d. All the above

The correct **answer** is c

516. The \_\_\_\_\_ is the fraction of the cells delivered in error.

- a. CLR
- b. CER
- c. CTD
- d. CDV

The correct **answer** is b

517. When added to Be, Bc should be less than the \_\_\_\_\_.

- a. CIR
- b. Committed burst size



- c. Access rate
- d. (a) and (b)

The correct **answer** is c

518. A connectionless iterative server uses \_\_\_\_\_ ports.

- a. Well-known
- b. Ephemeral
- c. Active
- d. (a) and (b)

The correct **answer** is a

519. The \_\_\_\_\_ socket is used with a protocol that directly uses the services of IP.

- a. Raw
- b. Stream
- c. Datagram
- d. Remote

The correct **answer** is a

520. A \_\_\_\_\_ server serves multiple clients, handling one request at a time.

- a. Connectionless iterative
- b. Connectionless concurrent
- c. Connection-oriented iterative
- d. Connection-oriented concurrent

The correct **answer** is a

521. A client issues \_\_\_\_\_ when it needs service from a server.

- a. An active request
- b. A finite open
- c. An active open
- d. A passive open

The correct **answer** is c

522. A \_\_\_\_\_ server serves multiple clients simultaneously.

- a. Connectionless iterative
- b. Connectionless concurrent
- c. Connection-oriented iterative
- d. Connection-oriented concurrent

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The correct **answer** is d

523. The server program is \_\_\_\_\_ because it is always available, waiting for a client request.

- a. Finite
- b. Infinite
- c. Active
- d. Passive

The correct **answer** is b

524. A connection-oriented concurrent server uses \_\_\_\_\_ ports.

- a. Well-known
- b. Ephemeral
- c. Active
- d. (a) and (b)

The correct **answer** is d

525. Machine A requests service X from machine B. Machine B requests service Y from machine A. What is the total number of application programs required?

- a. One
- b. Two
- c. Three
- d. Four

The correct **answer** is d

526. A server program, once it issues \_\_\_\_\_, waits for clients to request its service.

- a. An active request
- b. A finite open
- c. An active open
- d. A passive open

The correct **answer** is d

527. \_\_\_\_\_ can request a service.

- a. A socket interface
- b. A client
- c. A port

d. A server

The correct **answer** is b

528. \_\_\_\_\_ can provide a service.

a. An iterative server

b. A concurrent server

c. A client

d. (a) and (b)

The correct **answer** is d

529. The client program is \_\_\_\_\_ because it terminates after it has been served.

a. Finite

b. Infinite

c. Active

d. Passive

The correct **answer** is a

530. \_\_\_\_\_ processes requests one at a time.

a. An iterative server

b. A concurrent client

c. An iterative client

d. A concurrent server

The correct **answer** is a

531. The \_\_\_\_\_ socket is used with a connectionless protocol.

a. Raw

b. Stream

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c. Datagram

d. Remote

The correct **answer** is c

532. \_\_\_\_\_ processes many requests simultaneously.

a. An iterative server

b. A concurrent client

c. An iterative client

d. A concurrent server

The correct **answer** is d

533. In a connection-oriented concurrent server, the \_\_\_\_\_ is used for connection only.

- a. Well-known port
- b. Infinite port
- c. Ephemeral port
- d. (b) and (c)

The correct **answer** is a

534. A \_\_\_\_\_ is an instance of a \_\_\_\_\_.

- a. Program; process
- b. Process; program
- c. Process; service
- d. Structure; process

The correct **answer** is b

535. The \_\_\_\_\_ socket is used with a connection-oriented protocol.

- a. Raw
- b. Stream
- c. Datagram
- d. Remote

The correct **answer** is b

536. In the string 219.46.123.107.in-addr.arpa, what is the network address of the host we are looking for?

- a. 107.123.46.0
- b. 107.0.0.0
- c. 219.46.123.0
- d. 107.123.0.0

The correct **answer** is b

537. In \_\_\_\_\_ resolution the client is in direct contact with at most one server.

- a. A cache
- b. A recursive
- c. An iterative
- d. All the above

The correct **answer** is b

538. In address-to-name resolution the \_\_\_\_\_ domain is used.

- a. Reverse
- b. Generic
- c. Country
- d. Inverse

The correct **answer** is d

539. How is the lifetime of a name-to-address resolution in cache memory controlled?

- a. By the time-to-live field set by the server
- b. By the time-to-live counter set by the server
- c. By the time-to-live field set by the authoritative server
- d. (b) and (c)

The correct **answer** is d

540. A DNS response is classified as \_\_\_\_\_ if the information comes from a cache memory.

- a. Authoritative

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- b. Recursive
- c. Unauthoritative
- d. Iterative

The correct **answer** is c

541. A host with the domain name pit.arc.nasa.gov. is on the \_\_\_\_\_ level of the DNS hierarchical tree. (The root is level 1.)

- a. Fourth
- b. Fifth
- c. Third
- d. Not enough information given

The correct **answer** is b

542. A DNS \_\_\_\_\_ server's zone is the entire DNS tree.

- a. Secondary
- b. Root
- c. Primary
- d. All the above

The correct **answer** is b

543. To find the IP address of a host when the domain name is known, the \_\_\_\_\_ can be used.

- a. Inverse domain
- b. Generic domains
- c. Country domains
- d. (b) or (c)

The correct **answer** is a

544. A DNS \_\_\_\_\_ server gets its data from another DNS server.

- a. Root
- b. Primary
- c. Secondary
- d. All the above

The correct **answer** is c

545. A DNS \_\_\_\_\_ server creates, maintains, and updates the zone file.

- a. Root
- b. Primary
- c. Secondary
- d. All the above

The correct **answer** is b

546. A host with the domain name trinity.blue.vers.inc is on the \_\_\_\_\_ level of the DNS hierarchical tree. (The root is level 1.)

- a. Fourth
- b. Fifth
- c. Third
- d. Not enough information given

The correct **answer** is d

547. In the domain name chal.atc.fhda.edu, \_\_\_\_\_ is the least specific label.

- a. fhda
- b. edu
- c. chal
- d. atc

The correct **answer** is b

548. In the domain name chal.atc.fhda.edu, \_\_\_\_\_ is the most specific label.

- a. Fhda
- b. chal
- c. atc
- d. edu

The correct **answer** is b

549. In \_\_\_\_\_ resolution the client could directly contact more than one server.

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- a. An iterative
- b. A cache
- c. A recursive
- d. All the above

The correct **answer** is a

550. Which of the following domain names would most likely use a country domain to resolve its IP address?

- a. chal.atac.fhda.edu
- b. kenz.acct.sony.jp
- c. gsfc.nasa.gov
- d. mac.eng.sony.com

The correct **answer** is b

551. A resolver is the \_\_\_\_\_.

- a. Host machine
- b. DNS client
- c. DNS server
- d. Root server

The correct **answer** is b

552. Which of the following is true?

- a. FTP allows systems with different directory structures to transfer files.
- b. FTP allows a system using ASCII and a system using EBCDIC to transfer files.
- c. FTP allows a PC and a SUN workstation to transfer files.

d. All the above are true.

The correct **answer** is d

553. An email contains a textual birthday greeting, a picture of a cake, and a song. The text must precede the image. What is the content-type?

- a. Multipart/parallel
- b. Multipart/digest
- c. Multipart/alternative
- d. Multipart/mixed

The correct **answer** is d

554. During an FTP session the control connection is opened \_\_\_\_\_.

- a. As many times as necessary
- b. Exactly once
- c. Exactly twice
- d. All the above

The correct **answer** is b

555. The purpose of the MTA is \_\_\_\_\_.

- a. Transferral of messages across the Internet
- b. Message preparation
- c. Envelope creation
- d. (a) and (b)

The correct **answer** is a

556. In anonymous FTP, the user can usually \_\_\_\_\_.

- a. Store files
- b. Retrieve files
- c. Navigate through directories
- d. Do all the above

The correct **answer** is b

557. Which part of the mail created by the UA contains the sender and receiver names?

- a. Header
- b. Body
- c. Envelope
- d. Address



The correct **answer** is a

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558. In the email address [mackenzie@pit.arc.nasa.gov](mailto:mackenzie@pit.arc.nasa.gov), what is the domain name?

- a. mackenzie
- b. [mackenzie@pit.arc.nasa.gov](mailto:mackenzie@pit.arc.nasa.gov)
- c. pit.arc.nasa.gov
- d. (a) and (b)

The correct **answer** is c

559. The \_\_\_\_\_ field in the MIME header uses text to describe the data in the body of the message.

- a. Content-transfer-encoding
- b. Content-Id
- c. Content-type
- d. Content-description

The correct **answer** is b

560. The \_\_\_\_\_ field in the MIME header describes the method used to encode the data.

- a. Content-Id
- b. Content-description
- c. Content-type
- d. Content-transfer-encoding

The correct **answer** is d

561. The \_\_\_\_\_ field in the MIME header has type and subtype subfields.

- a. Content-transfer-encoding
- b. Content-type
- c. Content-Id
- d. Content-description

The correct **answer** is b

562. A JPEG image is sent as email. What is the content-type?

- a. Multipart/mixed
- b. Multipart/image
- c. Image/basic

d. Image/JPEG

The correct **answer** is d

563. The purpose of the UA is \_\_\_\_\_.

- a. Message preparation
- b. Envelope creation
- c. Transferral of messages across the Internet
- d. (a) and (b)

The correct **answer** is d

564. The \_\_\_\_\_ field in the MIME header is the type of data and the body of the message.

- a. Content-Id
- b. Content-description
- c. Content-type
- d. Content-transfer-encoding

The correct **answer** is c

565. A message is fragmented into three email messages. What is the content-type?

- a. Message/partial
- b. Multipart/partial
- c. Multipart/mixed
- d. Message/RFC822

The correct **answer** is a

566. A client machine usually needs \_\_\_\_\_ to send email.

- a. Only POP
- b. Both SMTP and POP
- c. Only SMTP
- d. None of the above

The correct **answer** is c

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567. In FTP, what attributes must be defined by the client prior to transmission?

- a. Data type
- b. File structure
- c. Transmission mode

d. All the above

The correct **answer** is d

568. In FTP, there are three types of \_\_\_\_: stream, block, and compressed.

a. Data structures

b. Transmission modes

c. Files

d. All the above

The correct **answer** is b

569. In FTP, ASCII, EBCDIC, and image define an attribute called \_\_\_\_.

a. Data structure

b. Transmission mode

c. File type

d. All the above

The correct **answer** is c

570. In FTP, when you \_\_\_\_, it is copied from the server to the client.

a. Retrieve a file

b. Store a file

c. Retrieve a list

d. (a) and (c)

The correct **answer** is d

571. In FTP, when you \_\_\_\_, it is copied from the client to the server.

a. Retrieve a file

b. Store a file

c. Retrieve a list

d. (a) and (c)

The correct **answer** is b

572. An email contains a textual birthday greeting, a picture of a cake, and a song. The order is not important. What is the content-type?

a. Multipart/digest

- b. Multipart/alternative
- c. Multipart/mixed
- d. Multipart/parallel

The correct **answer** is d

573. During an FTP session the data connection is opened \_\_\_\_\_.

- a. Exactly once
- b. Exactly twice
- c. As many times as necessary
- d. All the above

The correct **answer** is c

574. Which of the following is a retrieval method?

- a. HTTP
- b. FTP
- c. TELNET
- d. All the above

The correct **answer** is d

575. A request message always contains \_\_\_\_\_.

- a. A status line, a header, and a body
- b. A status line and a header
- c. A header and a body

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- d. A request line and a header

The correct **answer** is d

576. Which of the following is present in both a request line and a status line?

- a. URL
- b. Status code
- c. HTTP version number
- d. Status phrase

The correct **answer** is c

577. Which of the following is not a client program in WWW?

- a. FTP
- b. HTTP
- c. HTML

d. TELNET

The correct **answer** is c

578. A user wants to replace a document with a newer version; the request line contains the \_\_\_\_\_ method.

a. PUT

b. GET

c. POST

d. COPY

The correct **answer** is a

579. The \_\_\_\_\_ header can specify the client configuration and the client's preferred document format.

a. Request

b. Response

c. General

d. Entity

The correct **answer** is a

580. The \_\_\_\_\_ tags enclose binary code or byte code.

a. Executable contents

b. Image

c. List

d. Hyperlink

The correct **answer** is a

581. Which type of Web document is run at the client site?

a. Dynamic

b. Active

c. Static

d. All the above

The correct **answer** is b

582. HTTP has similarities to both \_\_\_\_\_ and \_\_\_\_\_.

a. FTP; MTV

b. FTP; URL

c. FTP; SNMP

d. FTP; SMTP

The correct **answer** is d

583. A user needs to send the server some information. The request line method is \_\_\_\_\_.

- a. OPTION
- b. POST
- c. PATCH
- d. MOVE

The correct **answer** is b

584. A response message always contains \_\_\_\_\_.

- a. A header and a body
- b. A status line, a header, and a body

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- c. A request line and a header
- d. A status line and a header

The correct **answer** is c

585. The \_\_\_\_\_ header supplies information about the body of a document.

- a. General
- b. Request
- c. Entity
- d. Response

The correct **answer** is c

586. The \_\_\_\_\_ header can specify the server configuration or provide information about a request.

- a. General
- b. Request
- c. Response
- d. Entity

The correct **answer** is c

587. Hypertext documents are linked through \_\_\_\_\_.

- a. TELNET
- b. Pointers
- c. DNS
- d. Homepages

The correct **answer** is b

588. Which of the following is an interpreter?

- a. CGI
- b. FTP
- c. HTTP
- d. HTML

The correct **answer** is d

589. What are the components of a browser?

- a. Controller, client program, interpreter
- b. Retrieval method, host computer, path name
- c. Hypertext, hypermedia, HTML
- d. All the above

The correct **answer** is a

590. A user needs to retrieve a document from the server; the request line contains the \_\_\_\_\_ method.

- a. GET
- b. HEAD
- c. POST
- d. PUT

The correct **answer** is a

591. Which type of Web document is fixed-content and is created and stored at the server site?

- a. Dynamic
- b. Active
- c. Static
- d. All the above

The correct **answer** is c

592. The \_\_\_\_\_ of a Web page contains the title and parameters used by the browser.

- a. Attributes
- b. Tags
- c. Head
- d. Body

The correct **answer** is c

593. Which type of Web document is created at the server site only when requested by a client?

a. Active

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b. Static

c. Dynamic

d. All the above

The correct **answer** is c

594. In <IMG SRC="Pictures/book1.gif" ALIGN=middle> ALIGN is \_\_\_\_.

a. The head

b. The body

c. A tag

d. An attribute

The correct **answer** is d

595. A user wants to copy a file to another location; the request line contains the \_\_\_\_ method.

a. PUT

b. PATCH

c. COPY

d. POST

The correct **answer** is c

596. What does the URL need to access a document?

a. Path name

b. Host computer

c. Retrieval method

d. All the above

The correct **answer** is d

597. Which type of Web document is transported from the server to the client in binary form?

a. Active

b. Static

c. Dynamic

d. All the above



The correct **answer** is a

598. An ending tag is usually of the form \_\_\_\_\_

- a. <tagname>
- b. <tagname!>
- c. </tagname>

The correct **answer** is c

599. An applet is a small application program written in \_\_\_\_\_

- a. Shell script
- b. Java
- c. C
- d. C++

The correct **answer** is b

600. Stock quotations are posted on the Web. This is probably a(n) \_\_\_\_\_ document.

- a. Passive
- b. Dynamic
- c. Active
- d. Static

The correct **answer** is b

601. Updates for a satellite's coordinates can be obtained on the WWW. This is probably a(n) \_\_\_\_\_ document.

- a. Passive
- b. Dynamic
- c. Active
- d. Static

The correct **answer** is b

602. A user needs to move a file to another location. The request line method is \_\_\_\_\_.

- a. PATCH

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- b. MOVE
- c. PUT
- d. GET

The correct **answer** is b

603. Which category of HTML tags allows the listing of documents?

- a. Image
- b. Hyperlink
- c. List
- d. Executable contents

The correct **answer** is c

604. A program can use \_\_\_\_\_ to write a CGI program.

- a. Bourne shell script
- b. Perl
- c. C
- d. Any of the above

The correct **answer** is d

605. An unemployed actor has posted his resume on the Web. This is probably a(n) \_\_\_\_\_ document.

- a. Passive
- b. Dynamic
- c. Active
- d. Static

The correct **answer** is d

606. The server receives input from a browser through \_\_\_\_\_.

- a. An attribute
- b. A form
- c. A tag
- d. Any of the above

The correct **answer** is b

607. Output from a CGI program is \_\_\_\_\_.

- a. Text
- b. Graphics
- c. Binary data
- d. Any of the above

The correct **answer** is d

608. \_\_\_\_\_ is used to enable the use of active documents.

- a. CGI
- b. Java

- c. HTML
- d. All the above

The correct **answer** is c

609. Java is \_\_\_\_\_.

- a. A programming language
- b. A run-time environment
- c. A class library
- d. All the above

The correct **answer** is d

610. An applet is \_\_\_\_\_ document application program.

- a. An active
- b. A passive
- c. A static
- d. A dynamic

The correct **answer** is a

611. In a real-time video conference, data from the server are \_\_\_\_\_ to the client sites.

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- a. Unicast
- b. Broadcast
- c. Multicast
- d. None of the above

The correct **answer** is c

612. A \_\_\_\_\_ adds signals from different sources to create a single signal.

- a. Mixer
- b. Translator
- c. Timestamp
- d. Sequence number

The correct **answer** is a

613. The RTCP \_\_\_\_\_ message shuts down a stream.

- a. Application-specific
- b. Source description
- c. Bye

d. Farewell

The correct **answer** is c

614. A standard that allows a telephone (connected to a public telephone network) to talk to a computer connected to the Internet is \_\_\_\_\_.

a. SIP

b. H.323

c. IEEE 802.3

d. V.90bis

The correct **answer** is b

615. A \_\_\_\_\_ changes the format of a high-bandwidth video signal to a lower-quality narrow-bandwidth signal.

a. Timestamp

b. Sequence number

c. Mixer

d. Translator

The correct **answer** is d

616. An RTP packet is encapsulated in a(n) \_\_\_\_\_.

a. IP datagram

b. RTCP packet

c. UDP user datagram

d. TCP segment

The correct **answer** is c

617. The last step in JPEG, \_\_\_\_\_, removes redundancies.

a. Blocking

b. Compression

c. Quantization

d. Vectorization

The correct **answer** is b

618. A \_\_\_\_\_ shows when a packet was produced relative to the first or previous packet.

a. Sequence number

b. Threshold

c. Timestamp

d. Playback buffer

The correct **answer** is c

619. \_\_\_\_\_ is a protocol to set up and terminate a connection between a computer on the Internet and a telephone (connected to a public telephone network).

a. H.245

b. H.225

c. H.323

d. Q.931

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The correct **answer** is d

620. TCP is not suitable for real-time traffic because \_\_\_\_\_.

a. There is no provision for timestamping

b. There is no support for multicasting

c. Missing packets are retransmitted

d. All the above

The correct **answer** is d

621. JPEG encoding involves \_\_\_\_\_, a process that reveals the redundancies in a block.

a. Quantization

b. Vectorization

c. Blocking

d. The DCT

The correct **answer** is d

622. The RTCP \_\_\_\_\_ report informs the sender and other receivers about the quality of service.

a. Sender

b. QoS

c. Receiver

d. Passive

The correct **answer** is c

623. \_\_\_\_\_ is an application layer protocol that establishes, maintains, and terminates a multimedia session.

a. DCT

- b. SIP
- c. RTCP
- d. JPEG

The correct **answer** is b

624. For streaming stored audio/video, the \_\_\_\_\_ holds information about the audio video file.

- a. Jitter
- b. Alpha file
- c. Beta file
- d. Metafile

The correct **answer** is d

625. \_\_\_\_\_ is a control protocol that adds functionalities to the streaming process.

- a. TCP/IP
- b. RTSP
- c. HTTP
- d. SIP

The correct **answer** is b

626. The audio/video stream is sent by the media server to the \_\_\_\_\_.

- a. Media player
- b. Browser
- c. Web server
- d. None of the above

The correct **answer** is a

627. Voice over IP is a(n) \_\_\_\_\_ audio/video application.

- a. Interactive
- b. Streaming stored
- c. Streaming live
- d. None of the above

The correct **answer** is a

628. \_\_\_\_\_ is a SIP message type.

- a. INVITE
- b. CANCEL

c. OPTIONS

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d. All the above

The correct **answer** is d

629. A \_\_\_\_\_ is involved in an SIP mechanism to find the IP address of a callee.

a. Proxy server

b. Registrar server

c. Media server

d. (a) and (b)

The correct **answer** is d

630. \_\_\_\_\_ are used to number the packets of a real-time transmission.

a. Translators

b. Timestamps

c. Playback buffers

d. Sequence numbers

The correct **answer** is d

631. In the \_\_\_\_\_ the encryption of each 8-byte block is independent of the others.

a. CVF

b. CSM

c. ECB mode

d. CBC mode

The correct **answer** is c

632. In the public-key method of cryptography, which key is publicly known?

a. Encryption key only

b. Decryption key only

c. Both

d. None of the above

The correct **answer** is a

633. A cipher is \_\_\_\_\_.

a. An encryption algorithm

- b. A decryption algorithm
- c. A private key
- d. (a) or (b)

The correct **answer** is d

634. Before a message is encrypted, it is called \_\_\_\_\_.

- a. Ciphertext
- b. Cryptotext
- c. Cryptonite
- d. Plaintext

The correct **answer** is d

635. If 20 people need to communicate using symmetric-key cryptography, \_\_\_\_\_ symmetric keys are needed.

- a. 190
- b. 200
- c. 19
- d. 20

The correct **answer** is a

636. The \_\_\_\_\_ is an example of polyalphabetic substitution.

- a. P-box
- b. Vigenere cipher
- c. S-box
- d. Product block

The correct **answer** is b

637. In the symmetric-key method of cryptography, which key is publicly known?

- a. Encryption key only
- b. Decryption key only

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- c. Both
- d. None of the above

The correct **answer** is d

638. The RSA algorithm uses a \_\_\_\_\_ cryptography method.

- a. Private-key
- b. Symmetric-key



- c. Denominational
- d. Public-key

The correct **answer** is d

639. The \_\_\_\_\_ is a block cipher.

- a. P-box
- b. S-box
- c. Product block
- d. All the above

The correct **answer** is d

640. We use an cryptography method in which the plaintext AAAAAA becomes the ciphertext BCDEFG. This is probably \_\_\_\_\_.

- a. Monoalphabetic substitution
- b. Transposition
- c. Polyalphabetic substitution
- d. None of the above

The correct **answer** is c

641. One way to encrypt and decrypt long messages is through the use of the \_\_\_\_\_.

- a. ECB mode
- b. CBC mode
- c. CFM
- d. All the above

The correct **answer** is d

642. An initialization vector is needed in the \_\_\_\_\_.

- a. CSM
- b. CBC mode
- c. CVF
- d. (a) and (b)

The correct **answer** is d

643. In the public-key method of cryptography, only the receiver has possession of the \_\_\_\_\_.

- a. Public key
- b. Both keys
- c. Private key

d. None of the above

The correct **answer** is c

644. After a message is decrypted, it is called \_\_\_\_\_.

a. Ciphertext

b. Cryptotext

c. Cryptonite

d. Plaintext

The correct **answer** is d

645. We use a cryptography method in which the character Z always substitutes for the character G. This is probably \_\_\_\_\_.

a. Polyalphabetic substitution

b. Transpositional

c. Monoalphabetic substitution

d. None of the above

The correct **answer** is c

646. A protocol called \_\_\_\_\_ describes the certificate issued by a CA in a structural way.

a. KDC

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b. X.509

c. CA level 1

d. Kerberos

The correct **answer** is b

647. Windows 2000 uses an authentication protocol called \_\_\_\_\_.

a. Otway-Rees

b. Kerberos

c. Diffie-Hellman

d. Needham-Schroeder

The correct **answer** is b

648. In the digital signature technique, the sender of the message uses \_\_\_\_\_ to create ciphertext.

a. His or her own public key

b. His or her own private key

c. His or her own symmetric key

d. The receiver's private key

The correct **answer** is b

649. A \_\_\_\_\_ is a trusted third party that solves the problem of symmetric-key distribution.

a. TLS

b. Firewall

c. CA

d. KDC

The correct **answer** is d

650. In a \_\_\_\_\_ attack, a message captured by an intruder is illegally sent a second time.

a. Return

b. Replay

c. Man-in-the-middle

d. Bucket brigade

The correct **answer** is b

651. In the \_\_\_\_\_ protocol, a nonce is decremented by 1 so that an intruder cannot send the exact same message a second time.

a. Needham-Schroeder

b. Diffie-Hellman

c. Otway-Rees

d. Kerberos

The correct **answer** is a

652. If user A wants to send an encrypted message to user B, the plaintext is encrypted with the public key of \_\_\_\_\_.

a. The network

b. User A

c. User B

d. (a) or (b)

The correct **answer** is c

653. When symmetric-key encryption is combined with private-key encryption, the \_\_\_\_\_ key is encrypted with the public key.

a. Skeleton

- b. Private
- c. Public
- d. Symmetric

The correct **answer** is d

654. The \_\_\_\_\_ issues tickets for the real server.

- a. Real server
- b. Data server
- c. AS
- d. TGS

The correct **answer** is c

### **A.K presentaon**

655. In \_\_\_\_\_-key cryptography, everyone has access to all the public keys.

- a. Private
- b. Certified
- c. Symmetric
- d. Public

The correct **answer** is c

**656. In the digital signature technique, the receiver of the message uses \_\_\_\_\_ to create plaintext.**

- a. The sender's public key
- b. Her or his own symmetric key
- c. Her or his own private key
- d. Her or his own public key

The correct **answer** is a

**657. A \_\_\_\_\_ is a large number used only once that helps distinguish a fresh authentication request from a repeated one.**

- a. Ticket
- b. Realm
- c. Nonce
- d. Public key

The correct **answer** is c

**658. A \_\_\_\_\_ certifies the binding between a public key and its owner.**

- a. KDC
- b. TLS
- c. CA
- d. Firewall

The correct **answer** is c

**659. In an authentication using symmetric keys, if 10 people need to communicate, we need \_\_\_\_\_ keys.**

- a. 90
- b. 10
- c. 20
- d. 45

The correct **answer** is d

**660. In the \_\_\_\_\_ protocol, the symmetric key is  $K = G^{xy} \bmod N$ , where G and N are public numbers.**

- a. Needham-Schroeder
- b. Otway-Rees
- c. Diffie-Hellman
- d. Kerberos

The correct **answer** is c

**661. In a \_\_\_\_\_ attack, an intruder comes between two communicating parties intercepting and replying to their messages.**

- a. Bucket-in-the-middle
- b. Replay
- c. Return
- d. Man-in-the-middle

The correct **answer** is d

**662. A \_\_\_\_\_ is a trusted third party that establishes a symmetric key between two parties who wish to communicate.**

- a. PKI
- b. TGS
- c. KDC

**A.K presentaon**

- d. CA

The correct **answer** is c

**663. \_\_\_\_\_ is an authentication protocol that needs an authentication server and a ticketgranting server.**

- a. Needham-Schroeder
- b. Diffie-Hellman
- c. Otway-Rees
- d. Kerberos

The correct **answer** is d

**664. The \_\_\_\_\_ is the KDC in the Kerberos protocol.**

- a. Real server
- b. Data server
- c. AS
- d. TGS

The correct **answer** is c

**665. The \_\_\_\_\_ field in the authentication header and the ESP header define the security method used in creating the authentication data.**

- a. Authentication data
- b. SPI
- c. Padding
- d. Sequence number

The correct **answer** is b

**666. Tunneling is a technique in which the IP datagram is first \_\_\_\_\_ and then \_\_\_\_\_.**

- a. Encapsulated in another datagram; encrypted
- b. Encrypted; encapsulated in another datagram
- c. Authenticated; encrypted
- d. Encrypted; authenticated

The correct **answer** is b

**667. \_\_\_\_\_ is an IP layer security protocol that only provides integrity and authentication.**

- a. PGP
- b. ESP
- c. IPSec
- d. AH

The correct **answer** is d

**668. An \_\_\_\_\_ is a private network with no external access that uses the TCP/IP suite.**

- a. Internet
- b. Intranet
- c. internet
- d. Extranet

The correct **answer** is b

**669. IPSec requires a logical connection between two hosts using a signaling protocol called \_\_\_\_\_.**

- a. PGP
- b. TLS
- c. AH
- d. SA

The correct **answer** is d

**670. An \_\_\_\_\_ is a private network with limited external access that uses the TCP/IP suite.**

- a. Intranet
- b. Extranet

**A.K presentaon**

- c. Internet
- d. internet

The correct **answer** is b

**671. The handshake protocol and data exchange protocol are part of \_\_\_\_\_.**

- a. TLS
- b. CA
- c. KDC
- d. SSH

The correct **answer** is a

**672. \_\_\_\_\_ is a collection of protocols that provide security at the IP layer level.**

- a. TLS
- b. SSH
- c. IPSec
- d. PGP

The correct **answer** is c

**673. A method to provide for the secure transport of email is called \_\_\_\_\_.**

- a. TLS
- b. PGP
- c. SA
- d. IPSec

The correct **answer** is b

**674. A VPN uses \_\_\_\_\_ to guarantee privacy.**

- a. IPSec
- b. Tunneling
- c. Both (a) and (b)
- d. None of the above

The correct **answer** is c

**675. A \_\_\_\_\_ can forward or block messages based on the information in the message itself.**

- a. Message digest
- b. Proxy firewall
- c. Packet-filter firewall
- d. Private key

The correct **answer** is b



**676. \_\_\_\_\_ is an IP layer security protocol that provides privacy as well as integrity and authentication.**

- a. AH
- b. PGP
- c. IPSec
- d. ESP

The correct **answer** is d

**677. \_\_\_\_\_ is a transport layer security protocol.**

- a. PGP
- b. IPSec
- c. TLS
- d. AH

The correct **answer** is c

**678. An IP datagram carries an authentication header if the \_\_\_\_\_ field of the IP header has a value of 51.**

- a. Protocol
- b. Security parameter index

**A.K presentaon**

- c. Sequence number
- d. Next-header

The correct **answer** is a

**679. A \_\_\_\_\_ network is totally isolated from the global Internet.**

- a. Private
- b. Hybrid
- c. Virtual private
- d. Any of the above

The correct **answer** is a

**680. A \_\_\_\_\_ network can use a leased line for intraorganization communication and the Internet for interorganization communication.**

- a. Private

- b. Hybrid
- c. Virtual private
- d. Any of the above

The correct **answer** is b

**681. In a VPN, \_\_\_\_\_ encrypted.**

- a. The inner datagram is
- b. Neither the inner nor the outer datagram is
- c. The outer datagram is
- d. Both inner and outer datagrams are

The correct **answer** is d

**682. A \_\_\_\_\_ can forward or block packets based on the information in the network layer and transport layer headers.**

- a. Proxy firewall
- b. Message digest
- c. Packet-filter firewall
- d. Private key

The correct **answer** is c

1: In a \_\_\_\_\_ name space, a name is assigned to an address. A name in this space is a sequence of characters without structure.

- a. flat**
- b. hierarchical
- c. organized
- d. none of the above

The correct answer is a

2: In a \_\_\_\_\_ name space, each name is made of several parts.

- a. flat
- b. hierarchical**
- c. organized
- d. none of the above

The correct answer is b

3: To have a hierarchical name space, a \_\_\_\_\_ was designed.

- a. domain space
- b. domain name
- c. domain name space**
- d. none of the above

The correct answer is c

4: In the DNS, the names are defined in \_\_\_\_\_ structure.

a. a linear list      **b. an inverted-tree**      c. a graph      d.  
none of the above

The correct answer is b

5: Each node in the tree has a \_\_\_\_\_, which is a string with a maximum of \_\_\_\_ characters.

a. label; 127      b. name; 255      **c. label; 63**      d. none of the above

The correct answer is c

6: The root of the DNS tree is \_\_\_\_\_.

a. a string of characters      b. a string of 63 characters  
**c. an empty string**      d. none of the above

The correct answer is c

7: A full domain name is a sequence of labels separated by \_\_\_\_\_.

a. semicolons      **b. Dots**      c. Colons      d. none of the above

The correct answer is b

8: If a label is terminated by a null string, it is called a \_\_\_\_\_.

a. PQDN      **b. FQDN**      c. SQDN      d. none of the above

The correct answer is b

9: If a label is not terminated by a null string, it is called a \_\_\_\_\_.

**a. PQDN**      b. FQDN      c. SQDN      d. none of the above

The correct answer is a

10: A \_\_\_\_\_ is a subtree of the domain name space.

a. label      b. name      **c. domain**      d. none of the above

The correct answer is c

11: What a server is responsible for or has authority over is called a \_\_\_\_\_.

a. domain      b. Label      **c. Zone**      d. none of the above

The correct answer is c

12: A \_\_\_\_\_ is a server whose zone consists of the whole tree.

a. domain server      b. zone server      **c. root server**      d.

none of the above

The correct answer is c

13: A \_\_\_\_\_ server loads all information from the disk file.

- a. **primary**      b. secondary      c. zone      d. none of the above

The correct answer is a

14: A \_\_\_\_\_ server loads all information from the primary server.

- a. primary      **b. secondary**      c. zone      d. none of the above

The correct answer is b

15: When the secondary downloads information from the primary, it is called \_\_\_\_\_ transfer.

- a. domain      **b. Zone**      c. Label      d. none of the above

The correct answer is b

16: In the Internet, the domain name space (tree) is divided into \_\_\_\_\_ different sections:

- a. **three**      b. two      c. four      d. none of the above

The correct answer is a

17: The \_\_\_\_\_ domains define registered hosts according to their generic behavior.

- a. **generic**      b. country      c. inverse      d. none of the above

The correct answer is a

18: The first level in the generic domains section allows \_\_\_\_\_ possible labels.

- a. 10      b. 12      c. 16      **d. none of the above**

The correct answer is d

19: The \_\_\_\_\_ domain section uses two-character country abbreviations.

- a. generic      **b. country**      c. inverse      d. none of the above

The correct answer is b

20: The \_\_\_\_\_ domain is used to map an address to a name.

- a. generic      b. country      **c. inverse**      d. none of the

above

The correct answer is c

21: In \_\_\_\_\_ resolution, the resolver expects the server to supply the final answer.

- a. iterative      **b. recursive**      c. straight      d. none of the

above

The correct answer is b

22: In \_\_\_\_\_ resolution, the server returns the IP address of the server that it thinks can resolve the query.

- a. iterative**      b. recursive      c. straight      d. none of the

above

The correct answer is a

23: In the domain name chal.atc.fhda.edu, \_\_\_\_\_ is the least specific label.

- a. chal      b. atc      **c. edu**      d. none of the above

The correct answer is c

24: In the domain name chal.atc.fhda.edu, \_\_\_\_\_ is the most specific label.

- a. chal**      b. atc      c. fhda      d. none of the above

The correct answer is a

25: A host with the domain name pit.arc.nasa.gov. is on the \_\_\_\_\_ level of the DNS hierarchical tree. (The root is level one.)

- a. third      b. fourth      **c. fifth**      d. none of the above

The correct answer is c

26: A pointer query involves the \_\_\_\_\_ domain.

- a. inverse**      b. Reverse      c. Root      d. none of the above

The correct answer is a

27: DNS can use the services of \_\_\_\_\_ using the well-known port 53.

- a. UDP      b. TCP      **c. either (a) or (b)**      d. none of the

above

The correct answer is c

33: When the sender and the receiver of an email are on the same

system, we need only \_\_\_\_\_.

- a. one UA      **b. two UAs**      c. one UA and one MTA      d. none of the above

The correct answer is b

34: When the sender and the receiver of an email are on different systems, we need only \_\_\_\_\_.

- a. one MTA      b. two UAs      **c. two UAs and one pair of MTAs**      d. none of the above

The correct answer is c

35: When the sender is connected to the mail server via a LAN or a WAN, we need \_\_\_\_\_.

- a. two MTA      **b. two UAs and two pairs of MTAs**      c. two UAs and a pair of MTAs      d. none of the above

The correct answer is b

36: When both sender and receiver are connected to a mail server via a LAN or a WAN, we need \_\_\_\_\_.

- a. two UAs, two pairs of MTAs, and a pair of MAAs**      b. two UAs, and two pairs of MTAs
- c. two UAs, two pairs of MTAs, and two pairs of MAAs      d. none of the above

The correct answer is a

37: \_\_\_\_\_ provides service to the user to make the process of sending and receiving a message easier.

- a. An MTA      b. An MAA      **c. A UA**      d. none of the above

The correct answer is c

38: Which of the following services is not provided by a UA?

- a. composing messages      b. reading messages      c. replying messages      **d. all are**

The correct answer is d

39: There are two types of user agents: \_\_\_\_\_ and \_\_\_\_\_.

- a. command-driven; data-driven      **b. command-driven; GUI-based**
- c. command-based and data-based      d. none of the above

The correct answer is b

40: The \_\_\_\_\_ usually contains the sender address, the receiver address, and other information.

- a. message      **b. envelope**      c. both a and b      d. none of the above

The correct answer is b

41: The message contains the \_\_\_\_\_ and the \_\_\_\_\_.

- a. header; envelop      **b. header; body**      c. envelop; body  
d. none of the above

The correct answer is b

42: In the Internet, the email address consists of two parts: a \_\_\_\_\_ and a \_\_\_\_\_.

- a. local part; domain name**      b. global part; domain name  
c. label; domain name      d. none of the above

The correct answer is a

43: \_\_\_\_\_ is a supplementary protocol that allows non-ASCII data to be sent through email.

- a. JPEG      b. MPEG      **c. MIME**      d. none of the above

The correct answer is c

44: The actual mail transfer is done through \_\_\_\_\_.

- a. Uas      **b. MTAs**      c. MAAs      d. none of the above

The correct answer is b

45: The formal protocol that defines the MTA client and server in the Internet is called \_\_\_\_\_.

- a. SMTP**      b. SNMP      c. TELNET      d. none of the above

The correct answer is a

46: The process of transferring a mail message occurs in \_\_\_\_\_ phases.

- a. two      b. four      c. five      **d. none of the above**

The correct answer is d

47: SMTP is a \_\_\_\_\_ protocol.

- a. pull      **b. push**      c. both a and b      d. none of the above

The correct answer is b

48: The third stage in an email transfer needs a \_\_\_\_\_ protocol.

- a. **pull**    b. push    c. both a and b    d. none of the above

The correct answer is a

49: The third stage in an email transfer uses a(n) \_\_\_\_\_ protocol.

- a. UA    b. MTA    c. **MAA**    d. none of the above

The correct answer is c

50: Currently two message access protocols are available: \_\_\_\_\_ and \_\_\_\_\_.

- a. POP3; IMAP2    b. POP4; IMAP1    c. **POP3; IMAP4**    d. none of the above

The correct answer is c

51: Which part of the mail created by the UA contains the sender and receiver names?

- a. envelope    b. address    c. **header**    d. none of the above

The correct answer is c

52: The MIME \_\_\_\_\_ header uses text to describe the type of data in the body of the message.

- a. content-type    b. content-transfer-encoding    c. content-**description**    d. none of the above

The correct answer is c

53: \_\_\_\_\_ is more powerful and complex than \_\_\_\_\_.

- a. POP3; IMAP4    b. **IMAP4; POP3**    c. SMTP; POP3    d. none of the above

The correct answer is b

1: \_\_\_\_\_ is a repository of information linked together from points all over the world.

- a. **The WWW**    b. HTTP    c. HTML    d. none of the above

The correct answer is a



2: The WWW today is a \_\_\_\_\_ client-server service, in which a client using a browser can access a service using a server.

a. limited      b. vast      **c. distributed**      d. none of the above

The correct answer is c

3: The \_\_\_\_\_ is a standard for specifying any kind of information on the Internet.

**a. URL**      b. ULR      c. RLU      d. none of the above

The correct answer is a

4: In a URL, the \_\_\_\_\_ is the client-server program used to retrieve the document.

a. path      **b. protocol**      c. host      d. none of the above

The correct answer is b

5: In a URL, the \_\_\_\_\_ is the computer on which the information is located.

a. path      b. protocol      **c. host**      d. none of the above

The correct answer is c

6: In a URL, an optional \_\_\_\_\_ can be inserted between the host and the path, and it is separated from the host by a colon.

a. path      b. protocol      c. host      **d. none of the above**

The correct answer is d

7: In a URL, the \_\_\_\_\_ is the full name of the file where the information is located.

**a. path**      b. protocol      c. host      d. none of the above

The correct answer is a

8: A cookie is made by the \_\_\_\_\_ and eaten by the \_\_\_\_\_.

a. client; client      b. client; server      **c. server; server**      d. none of the above

The correct answer is c

9: The documents in the WWW can be grouped into \_\_\_\_\_ broad categories.

a. two      **b. three**      c. four      d. none of the above

The correct answer is b

10: A \_\_\_\_\_ document is a fixed-content document that is created

and stored in a server. The client can get a copy of the document only.

a. **static**                      b. dynamic                      c. active                      d. none of the above

The correct answer is a

11: \_\_\_\_\_ is a language for creating Web pages.

a. HTTP                      b. **HTML**                      c. FTTP                      d. none of the above

The correct answer is b

12: A \_\_\_\_\_ document is created by a Web server whenever a browser requests the document.

a. static                      b. **dynamic**                      c. active                      d. none of the above

The correct answer is b

13: \_\_\_\_\_ is a technology that creates and handles dynamic documents.

a. GIC                      b. **CGI**                      c. GCI                      d. none of the above

The correct answer is b

14: Dynamic documents are sometimes referred to as \_\_\_\_\_ dynamic documents.

a. client-site                      b. **server-site**                      c. both a and b                      d. none of the above

The correct answer is b

15: For many applications, we need a program or a script to be run at the client site. These are called \_\_\_\_\_ documents.

a. static                      b. dynamic                      c. **active**                      d. none of the above

The correct answer is c

16: One way to create an active document is to use \_\_\_\_\_.

a. CGI                      b. Java stand-alone programs                      c. **Java applets**  
d. none of the above

The correct answer is c

17: Active documents are sometimes referred to as \_\_\_\_\_ dynamic documents.

- a. **client-site**                      b. server-site                      c. both a and b                      d. none of the above

The correct answer is a

18: HTTP uses the services of \_\_\_\_\_ on well-known port 80.

- a. UDP                      b. IP                      c. **TCP**                      d. none of the above

The correct answer is c

19: In HTTP, the first line in a request message is called a \_\_\_\_\_ line; the first line in the response message is called the \_\_\_\_\_ line.

- a. request; response                      b. response; request  
c. response; status                      d. **none of the above**

The correct answer is d

20: In a \_\_\_\_\_ connection, one TCP connection is made for each request/response.

- a. persistent                      b. **nonpersistent**  
c. both a and b                      d. none of the above

The correct answer is b

21: In a \_\_\_\_\_ connection, the server leaves the connection open for more requests after sending a response.

- a. **persistent**                      b. nonpersistent                      c. both a and b                      d. none of the above

The correct answer is a

22: HTTP version 1.1 specifies a \_\_\_\_\_ connection by default.

- a. **persistent**                      b. nonpersistent                      c. both a and b                      d. none of the above

The correct answer is a

23: In HTTP, a \_\_\_\_\_ server is a computer that keeps copies of responses to recent requests.

- a. regular                      b. **proxy**                      c. both a and b                      d. none of the above

The correct answer is b

24: An HTTP request message always contains \_\_\_\_\_.

- a. a header and a body
- b. a request line and a header**
- c. a status line, a header, and a body
- d. none of the above

The correct answer is b

25: Which of the following is present in both an HTTP request line and a status line?

- a. HTTP version number**
- b. URL
- c. status code
- d. none of the above

The correct answer is a

26: The HTTP request line contains a \_\_\_\_\_ method to request a document from the server.

- a. GET**
- b. POST
- c. COPY
- d. none of the above

The correct answer is a

27: A user needs to send the server some information. The request line method is \_\_\_\_\_.

- a. OPTION
- b. PATCH
- c. POST**
- d. none of the above

The correct answer is c

28: The HTTP request line contains a \_\_\_\_\_ method to get information about a document without retrieving the document itself.

- a. HEAD**
- b. POST
- c. COPY
- d. none of the above

The correct answer is a

29: A response message always contains \_\_\_\_\_.

- a. a header and a body
- b. a request line and a header
- c. a status line and a header**
- d. none of the above

The correct answer is c

30: An applet is \_\_\_\_\_ document application program.

a. a static      **b. an active**      c. a passive      d. a dynamic

The correct answer is b

1: A repeater is a connecting device that operates in the \_\_\_\_\_ layer of the Internet model.

**a. physical**      b. data link      c. network      d. all of the above

The correct answer is a

2: A \_\_\_\_\_ regenerates a signal, connects segments of a LAN, and has no filtering capability.

**a. repeater**      b. bridge      c. router      d. none of the above

The correct answer is a

3: A \_\_\_\_\_ is a connecting device that operates in the physical and data link layers of the Internet model.

a. repeater      **b. bridge**      c. router      d. none of the above

The correct answer is b

4: A \_\_\_\_\_ bridge can forward and filter frames and automatically build its forwarding table.

a. simple      b. dual      **c. transparent**      d. none of the above

The correct answer is c

5: A bridge can use the \_\_\_\_\_ algorithm to create a loopless topology.

a. binary tree      **b. spanning tree**      c. multiway tree      d. none of the above

The correct answer is b

6: A \_\_\_\_\_ LAN allows several LANs to be connected.

**a. backbone**      b. wireless      c. wired      d. none of the above

The correct answer is a

7: A backbone is usually a \_\_\_\_\_.

a. bus                      b. star                      **c. either (a) or (b)**                      d.  
neither (a) nor (b)  
The correct answer is c

8: A virtual local area network (VLAN) is configured by \_\_\_\_\_.  
**a. software**      b. physical wiring      c. hardware      d. none of  
the above  
The correct answer is a

9: Membership in a VLAN can be based on \_\_\_\_\_.  
a. port numbers      b. MAC addresses      c. IP addresses  
**d. all of the above**  
The correct answer is d

10: VLANs can \_\_\_\_\_.  
a. reduce network traffic                      b. provide an extra measure  
of security  
c. either (a) or (b)                      **d. both (a) and (b)**  
The correct answer is d

11: \_\_\_\_\_ is just a connector.  
a. An active hub                      **b. A passive hub**      c. either (a) or (b)  
d. neither (a) nor (b)  
The correct answer is b

12: In a star-topology Ethernet LAN, \_\_\_\_\_ is just a point where the  
signals coming from different stations collide; it is the collision  
point.  
a. An active hub                      **b. A passive hub**  
c. either (a) or (b)      d. neither (a) nor (b)  
The correct answer is b

13: \_\_\_\_\_ is part of the media; its location in the Internet model is  
below the physical layer.  
a. An active hub                      **b. A passive hub**  
c. either (a) or (b)      d. neither (a) nor (b)  
The correct answer is b

14: A \_\_\_\_\_ is a device that operates only in the physical layer.  
a. passive hub      **b. repeater**      c. bridge      d. router

The correct answer is b

15: A \_\_\_\_\_ receives a signal and, before it becomes too weak or corrupted, regenerates the original bit pattern. It then sends the refreshed signal.

a. passive hub      **b. repeater**      c. bridge      d. router

The correct answer is b

16: A \_\_\_\_\_ forwards every frame; it has no filtering capability.

a. passive hub      **b. repeater**      c. bridge      d. router

The correct answer is b

17: \_\_\_\_\_ is actually a multiport repeater. It is normally used to create connections between stations in a physical star topology.

**a. An active hub**      b. A passive hub      c. either (a) or (b)  
d. neither (a) nor (b)

The correct answer is a

18: A \_\_\_\_\_ operates in both the physical and the data link layer.

a. passive hub      b. repeater      **c. bridge**      d.  
router

The correct answer is c

19: A \_\_\_\_\_ can check the MAC addresses contained in the frame.

a. passive hub      b. repeater      **c. bridge**      d.  
router

The correct answer is c

20: A \_\_\_\_\_ has a table used in filtering decisions.

a. passive hub      b. repeater      **c. bridge**      d. none  
of the above

The correct answer is c

21: A \_\_\_\_\_ is a device in which the stations are completely unaware of its existence.

a. passive hub      b. repeater      c. simple bridge  
**d. transparent bridge**

The correct answer is d

22: IEEE 802.1d specification, defines \_\_\_\_\_ criteria for a

transparent bridges.

- a. two                      **b. three**                      c. four                      d. none of

the above

The correct answer is b

23: A spanning tree is a graph in which there is no \_\_\_\_.

- a. node    b. branch                      **c. loop**                      d. arc

The correct answer is c

24: In a bridged LAN, the \_\_\_\_\_ algorithm creates a topology in which each LAN can be reached from any other LAN through one path only.

- a. **spanning tree**                      b. binary tree                      c. unary tree  
d. none of the above

The correct answer is a

25: A three-layer switch is a kind of \_\_\_\_\_.

- a. repeater    b. bridge                      **c. router**                      d. none of the  
above

The correct answer is c

26: A two-layer switch is a \_\_\_\_\_.

- a. repeater    **b. bridge**                      c. router                      d. none of the  
above

The correct answer is b

27: Some new two-layer switches, called \_\_\_\_\_ switches, have been designed to forward the frame as soon as they check the MAC addresses in the header of the frame.

- a. cut-through**                      b. go-through                      c. come-through                      d.  
none of the above

The correct answer is a

28: A \_\_\_\_\_ is a three-layer device that handles packets based on their logical addresses.

- a. repeater    b. bridge                      **c. router**                      d. none of the  
above

The correct answer is c

29: A \_\_\_\_\_ normally connects LANs and WANs in the Internet and has a table that is used for making decisions about the route.



a. repeater      b. bridge      **c. router**      d. none of the above

The correct answer is c

30: A \_\_\_\_ switch is a faster and more sophisticated router.

a. two-layer      **b. three-layer**      c. four-layer      d. none of the above

The correct answer is b

31: A \_\_\_\_\_ is normally a computer that operates in all five layers of the Internet model or seven layers of OSI model.

a. repeater      b. bridge      c. router      **d. gateway**

The correct answer is d

32: A \_\_\_\_ can be used as a connecting device between two internetworks that use different models.

a. repeater      b. bridge      c. router      **d. gateway**

The correct answer is d

33: In a \_\_\_\_ backbone, the backbone is just one switch.

a. bus      b. ring      **c. star**      d. none of the above

The correct answer is c

34: A \_\_\_\_\_ link acts as a LAN in a remote backbone connected by remote bridges.

a. **point-to-point**      b. multipoint      c. multidrop      d. none of the above

The correct answer is a

35: VLANs create \_\_\_\_\_ domains.

a. unicast      b. multicast      **c. broadcast**      d. none of the above

The correct answer is c

36: In a(n) \_\_\_\_\_ configuration, the administrator types the port numbers, the IP addresses, or other characteristics, using the VLAN software.

**a. manual**      b. automatic      c. semiautomatic      d. none of the above

The correct answer is a

37: In a(n) \_\_\_\_ configuration, the stations are automatically connected or disconnected from a VLAN using criteria defined by the administrator.

a. manual      **b. automatic**      c. semiautomatic      d. none of the above

The correct answer is b

38: In a(n) \_\_\_\_ configuration, the initializing is done manually, with migrations done automatically.

a. manual      b. automatic      **c. semiautomatic**      d. none of the above

**The correct answer is c**

### Question # 1 of 10

Classes of Transmission Media are \_\_\_\_

- Electromagnetic Spectrum
- Coaxial and Twisted Cable Media
- **Guided and Unguided Media**
- None of Given

### Question # 2 of 10

56k Modems maximum uploading Data rate is 40K.

- True
- **False**

### Question # 3 of 10

Light source can either \_\_\_\_ or \_\_\_\_

- ELD,LID
- LED,LID
- ELD,ILD
- **LED,ILD**

#### **Question # 4 of 10**

Tropospheric Propagation is in two ways Light-of-Sight and Broadcast

- True
- **False**

#### **Question # 5 of 10**

Modem standards are \_\_\_\_\_

- Cable Modem
- Bell and ITU-U modem
- Traditional and 56K Modem
- **None of Given**

#### **Question # 6 of 10**

In 56K Modem maximum uploading speed is \_\_\_\_ bytes and downloading speed is \_\_\_\_ Bytes

- 40K,56K

- **33.6K,56K**
- 56K,33.6K
- None of Given

#### **Question # 7 of 10**

A Broadcast signal is received by orbiting satellite which rebroadcasts

- To the resender
- To the sender
- To the atmosphere
- **None of Given**

#### **Question # 8 of 10**

Data rate limitation of traditional modems is 6KHz.

- True
- **False**

#### **Question # 9 of 10**

Q STP can eliminate a phenomenon called Crosstalk

- **True**
- False

#### **Question # 10 of 10**

Speed of Light in a vacuum is

- 200,000 Km/sec
- **300,000 Km/sec**
- 600,000 Km/sec
- None of Given

**There are three types of Hubs that exist. Which of the following options correctly describes these three.**

1. Passive, dormant, special
2. Active , dormant , passive
3. Passive, Active, Turbo
- 4. Passive, Active, Intelligent**

ANS:----

**2. A number of different factors determine the cost of a Hub. Which of the following is among these factors?**

1. Speed rating
2. Durability
3. Brand
4. Class

**(3) Three(3) basic devices are used in setting up a single Network. Which of the following best describes these devices?**

- 1. NIC (Ethernet), Hub, Twisted pair/Coaxial cable**
2. Disk drive, CPU, Hub
3. Hub, CPU, NIC (Ethernet)

4. Disk drive, Hub, NIC (Ethernet)

**4. Which of the following network topologies among the list below is incorrect?**

1. Star
2. **Internet**
3. Ring
4. Bus

**4. Which of the following is not a feature of Base band Coaxial Cable?**

1. **Bi-directional**
2. Few Kilometer ranges
3. Proton based
4. Ethernet (basis for 802.3) at 10 Mbps

**4. Which of the following is not a function of a repeater?**

1. Uses Jumper Settings
2. **Transmits data in both directions**
3. No Buffering
4. Joins two(2) segments of cables

**4. Which level of the TCP/IP reference model routes data/information across a network channel ?**

1. Application layer
2. Data Link Layer
3. **Transport Layer**
4. Network Layer

**4. The function of a modem is to convert signals. Identify the correct signals it converts.**

1. **Analogue to Digital**
2. Analogue to Baud rate
3. Baud rate to Analogue
4. Digital to Binary

**4. Which of the following is not a LAN – Architecture?.**

- (a) Protocol architecture
2. Media access control
3. **Logical Protocol**
4. Logical Link Control

**4. Identify the statement which best describes TCP and UDP.**

1. **TCP is a connection oriented Protocol whiles UDP is a datagram service**
2. TCP is a protocol for the Network Layer of the OSI
3. UDP and TCP could be used interchangeably
4. TCP is an advanced protocol whiles UDP is a single protocol

**4. Which of the following characteristics best describes a frame?**

1. Data link layer(Header, Trailer, Data)
2. Network Layer(Header, Trailer, Data)
3. **Transport Layer(Header, Trailer, Data)**
4. Physical Layer(Header, Trailer, Data)

#### **4. What does the terminology ISDN mean?**

1. **Internal Digital Services Network**
2. Integrated Systems Digital Network
3. Integrated Services Digital Naming System
4. Integrated Services Digital Network

#### **4. What does the terminology ATM mean?**

1. **Automatic transfer mode**
2. Automatic translation mode
3. Asynchronous transfer mode
4. Asynchronous transformation mode

#### **4. A simple Architecture for File Transfer is made up of :**

1. File transfer application; Communications service module; Network access module
2. File transfer application; transport layer; Network access module
3. Network access layer; Transport layer; Application layer
4. **Application layer; Network layer; Session layer**

#### **4. Which of the following statements is true about standards?**

1. Standards create additional cost
2. Standards help individuals users to increase effectiveness
3. **Standards allow products from multiple vendors to**



**communicate**

4. Standards cannot freeze technology

**4. Which of the following statement is true about FLOW CONTROL?**

1. Flow control is a function performed by a receiving entity to limit the amount or rate of data on a network.

**2. Flow control adjusts the weights on a network**

3. Flow control is a function performed by the MODEM

4. Flow control is an advanced form of network management

**4. Identify the most suitable description for ERROR CONTROL?**

1. Error control is an activity that manages deadlock.

2. Error control is an advanced form of parity bit

**3. Error control is a sub-function of a modem and Hub**

4. Error control is needed to guard against loss or damage of data

**(18) What is the full meaning of the terminology SMTP?**

1. State Mail Transfer Protocol

2. Simple Mail Tailor Protocol

3. Simple Management Transfer Protocol

**4. Simple Mail Transfer Protocol**

**19. Several Computers connected together is called:**

1. Client-server

**2. Client**

- 3. Computer network
- 4. Hub

**19. In which of the following networks does the client submit a task to the server, then the server executes and returns the result for the requesting client station?**

- 1. Peer-to-Peer
- 2. Client-Server
- 3. Server-Based
- 4. All of the above**

**19. In which network topology are all workstations connected in cascade form?**

- 1. Star
- 2. Ring
- 3. Mesh**
- 4. Bus

**19. Which network topology uses a Hub?**

- 1. Star
- 2. Bus**
- 3. Mesh
- 4. Ring

**Question No: 1 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ In RS 422 Balanced mode two lines carry \_\_\_\_\_ signals which are not identical to each other.

► same

- ▶ **different**
- ▶ digital
- ▶ analog

**Question No: 2 ( Marks: 1 ) - Please choose one**

The \_\_\_\_\_ generates the data and passes it along with any control information to a \_\_\_\_\_.

- ▶ DTE; DCE
- ▶ DCE; DTE
- ▶ DCE; node
- ▶ DTE; application

**Question No: 3 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ In \_\_\_\_\_ transmission, a start bit and a stop bit frame a character byte.

- ▶ **Asynchronous serial**
- ▶ Synchronous serial
- ▶ Parallel
- ▶ Asynchronous & Synchronous serial

**Question No: 4 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ In \_\_\_\_\_ transmission, bits are transmitted simultaneously, each across its own wire.

- ▶ Asynchronous serial
- ▶ Synchronous serial
- ▶ **Parallel**
- ▶ Asynchronous & Synchronous serial

**Question No: 5 ( Marks: 1 ) - Please choose one**

Asynchronous transmission is \_\_\_\_\_

- ▶ slow
- ▶ costly
- ▶ **non-effective**
- ▶ fast

**Question No: 6 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ In  
\_\_\_\_\_ transmission the timing of the signal is unimportant.

- ☒ **Asynchronous**
- ☐ Synchronous
- ☐ Polar
- ☐ Bi-polar

**Question No: 7 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ In  
8QAM each signal shift or one baud represents \_\_\_\_\_.

- ▶ 4 bits
- ▶ **2 bits**
- ▶ 5 bits
- ▶ 3 bits

**Question No: 8 ( Marks: 1 ) - Please choose one**

PCM is the first process of PAM.

- ☒ True
- ▶ **False**

**Question No: 9 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ Bi  
phase encoding is a type of bipolar encoding in which we use two voltage levels.

- ▶ **True**
- ▶ False

**Question No: 10 ( Marks: 1 ) - Please choose one**

---

The amplitude of a digital signal depends upon the\_\_\_\_\_ to represent a bit.

- ▶ phase
- ▶ voltage
- ▶ wavelength

**Question No: 11 ( Marks: 1 ) - Please choose one**

---

Time domain plot show changes in signal phase with respect to time.

- ▶ **True**
- ▶ False

**Question No: 12 ( Marks: 1 ) - Please choose one**

---

OSI model was developed prior to TCP/IP model.

- ▶ **True**
- ▶ False

**Question No: 13 ( Marks: 1 ) - Please choose one**

---

The \_\_\_\_\_ layer is the layer closest to the transmission medium.

- ▶ **physical**
- ▶ data link
- ▶ network
- ▶ transport

**Question No: 14 ( Marks: 1 ) - Please choose one**

---

Data chunk at data link layer is called\_\_\_\_\_

☐frame

☐packet

☐datagram

**Question No: 15 ( Marks: 1 ) - Please choose one**

The internet model consists of \_\_\_\_\_ layers.

▶ three

▶ two

▶ **five**

▶ seven

**Question No: 16 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_representation of links that connect nodes is called as physical topology.

☐geometrical

☐logical

☐physical

**Question No: 17 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ is a multipoint topology.

▶ Ring

▶ Mesh

▶ Tree

▶ **Bus**

**Question No: 18 ( Marks: 1 ) - Please choose one**

\_\_\_\_\_ In mesh topology, if there are five nodes then there will be \_\_\_\_\_ links.

▶ 5

▶ **10**

▶ 15

▶ 20

**Question No: 19 ( Marks: 1 ) - Please choose one**

---

Non proprietary standard is also termed as de facto standard.

▶ **True**

▶ False

**Question No: 20 ( Marks: 1 ) - Please choose one**

---

Effective network mean that the network has fast delivery, timeliness and

▶ **high bandwidth**

▶ Duplex transmission

▶ accurate transmission

▶ Low bandwidth

**Question No. 4 Marks: 2**

**The \_\_\_\_\_ layer is the layer closest to the transmission medium.**

☐ Physical

☐ Data Link

☐ Network

☐ Transport

**Question No. 5 Marks: 2**

**The information to be communicated in a data communication system is the**

**\_\_\_\_\_.**

☐ Medium

☐ Protocol

☐ **Message**

☐ Transmission

**Question No. 6 Marks: 2**

**In \_\_\_\_\_ transmission a timing of signal is unimportant.**

- ☐ Synchronous
- ☐ Asynchronous
- ☒ **Both**
- ☐ None of these

**Which of the following is most affected by voice?**

- ☐ QAM
- ☐ ASK
- ☒ **FSK**
- ☐ PSK

**The \_\_\_\_\_ layer is the layer closest to the transmission medium.**

- ☐ Physical
- ☐ Data Link
- ☐ Network
- ☐ Transport

**Which error detection method uses ones complement arithmetic?**

- ☐ Simple parity check
- ☐ Two-dimensional parity check
- ☐ CRC
- ☐ Checksum



**Question No. 2 Marks : 2**

**In a time-domain plot, the vertical axis is the measure of \_\_\_\_.**

- ☐ Amplitude
- ☒ **Frequency**
- ☐ Phase
- ☐ Time

**Which topology requires a multipoint connection?**

- ☐ Mesh
- ☐ Star
- ☒ **Bus**
- ☐ Ring

**Draw the sender and receiver windows for a system using Go-Back-N ARQ, given the following:**

- a. Frame 0 is sent; frame 0 is acknowledged.**
- b. Frames 1 and 2 are sent; frame 1 and 2 are acknowledged.**
- c. Frames 3, 4 and 5 are sent; frame 4 is acknowledged; timer for frame 5 expires.**
- d. Frames 5, 6 and 7 are sent; frames 4 through 7 are acknowledge.**

**A timer is set when \_\_\_\_\_ is (are) sent out.**

- ☐ A data frame
- ☐ An ACK
- ☐ A NAK
- ☐ An ARQ

**If the data unit is 111111, the divisor 1010, and the remainder 110, what is the dividend at the receiver?**

- ☐ 111111011
- ☐ 111111110
- ☐ 1010110
- ☐ 110111111

**In cyclic redundancy checking, what is the CRC?**

- ☐ the divisor
- ☐ the quotient
- ☐ the dividend
- ☐ the remainder

**In fiber optics the signal source is \_\_\_\_\_ waves.**

- ☐ Light
- ☒ **Radio**
- ☐ Very Low frequency
- ☐ Infrared

**Which multiplexing technique shifts each signal to a different carrier frequency?**

- ☐ FDM
- ☐ Synchronous TDM
- ☐ Asynchronous TDM
- ☐ None of the above

**The \_\_\_\_\_ of a signal is the width of the frequency spectrum.**

- ☐ Amplitude
- ☐ Bandwidth
- ☐ Bit interval
- ☐ Phase

**Poll/Select is a technique related with**

- ▶ line control
- ▶ **line discipline**
- ▶ error control

**Router work on**

- ▶ data link layer
- ▶ physical layer
- ▶ **network layer**

**A Null modem is a**

- ▶ traditional modem
- ▶ **technique to connect two DTE**
- ▶ both

**WDM(wave division multiplexing) deals with**

- ▶ electric waves
- ▶ light waves
- ▶ **both**

**Set of rules governing communication is known as**

- ▶ OSI model
- ▶ **Protocol**
- ▶ Medium

**Burst error is easily corrected then bit error.**

- ▶ **TRUE**
- ▶ FALSE

**Unipolar use one voltage levels.**

- ▶ TRUE
- ▶ FALSE

**TCP/IP application layers combine the functions of OSI**

**Application, Session and Transport layers.**

▶ **TRUE**

▶ FALSE

**OSI standard is practically implemented in the form of internet.**

▶ TRUE

▶ **FALSE**

**In fiber optics, the signal source is \_\_\_\_\_ waves.**

light

radio

infrared

very low frequency

**Wave division multiplexing (WDM) is conceptually the same as FDM, except that the multiplexing and demultiplexing involve \_\_\_\_\_ signals.**

**analog**

light

digital

periodic

**Local loop is a connection between \_\_\_\_\_ and \_\_\_\_\_.**

**Subscriber's handset and exchange**

exchange and T-Lines

exchange and E-Lines

None of the above

**In vertical redundancy check (VRC) a \_\_\_\_\_ bit is added to every data unit.**

synchronization

framing

parity

**interleaving**

**In cyclic redundancy checking, what is CRC?**

**The divisor**

The remainder

The quotient

**Which error detection method involves polynomials?**

CRC

**VRC**

LRC

Checksum

**In stop and wait ARQ, if “data 1” has an error, the receiver sends a \_\_\_\_\_ frame.**

NAK

NAK 0

NAK 1

NAK 2

**Poll/Select line discipline requires \_\_\_\_\_ to identify the packet recipient.**

an address

a timer

**a buffer**

a dedicated line

**Which of the following best describes a single-bit error?**

1 A single bit is inverted

2 A single bit is inverted per transmission

3 A single bit is inverted per data unit

4 Any of the above

**In fiber optic cable, the signal source is \_\_\_\_\_ waves**

1 Infrared

2 Light

**3 Radio**

#### 4 Very Low Frequency

**In an environment with many high-voltage devices, the best transmission medium would be \_\_\_\_\_.**

- 1 **Atmosphere**
- 2 Coaxial Cable
- 3 Twisted Pair
- 4 Fiber Optic Cable

**Which of the following is not a guided medium?**

- 1 **Twisted Pair**
- 2 Fiber Optic Cable
- 3 Coaxial Cable

**Which multiplexing technique involves signals composed of light beams?**

- 1 TDM
- 2 FDM
- 3 WDM
- 4 None of the above

**The \_\_\_\_\_ layer changes bits into electromagnetic signals.**

- 1 Network
- 2 Application
- 3 **Physical**
- 4 Presentation

**Flow Control is needed to prevent \_\_\_\_\_**

- 1 Overflow of sender buffer
- 2 **Overflow of the receiver buffer**
- 3 Bit Errors
- 4 Collision between sender and receiver