

CS601 FINAL TERM SOLVED MCQs By Faisal Dar

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1) Which multiplexing technique transmits digital signals?

- A) WDM
- B) FDM
- C) **TDM**
- D) None of the above

2) 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

3) 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) $n - 1$

4) 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
- 5) 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
- 6) The sharing of a medium and its link by two or more devices is called _____.
- A) Modulation
 - B) Encoding
 - C) **Multiplexing**
 - D) Line discipline
- 7) 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
- 8) Guard bands increase the bandwidth for _____.
- A) TDM
 - B) **FDM**
 - C) Both (a) and (b)

D) None of the above

9) Which multiplexing technique transmits analog signals?

- A) FDM
- B) TDM
- C) WDM
- D) **(a) and (c)**

10) In a T-1 line, _____ interleaving occurs.

- A) Bit
- B) Byte**
- C) DS-0
- D) Switch

11) Which multiplexing technique involves signals composed of light beams?

- A) WDM**
- B) FDM
- C) TDM
- D) None of the above

12) The VLF and LF bands use _____ propagation for communications.

- A) Space
- B) Ground**
- C) Sky
- D) Line of sight

13) Category 1 UTP cable is most often used in _____ networks.

- A) Infrared
- B) Telephone**
- C) Fast Ethernet
- D) Traditional Ethernet

14) BNC connectors are used by _____ cables.

- A) Fiber-optic
- B) UTP
- C) STP
- D) Coaxial**

15) Which of the following is not a guided medium?

- A) Twisted-pair cable
- B) Fiber-optic cable
- C) Atmosphere**
- D) Coaxial cable

16) 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**

17) _____ 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

18) In fiber optics, the signal source is _____ waves.

- A) Very low-frequency
- B) **Light**
- C) Radio
- D) Infrared

19) 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

20) Which of the following primarily uses guided media?

- A) Cellular telephone system
- B) Satellite communications
- C) **Local telephone system**
- D) Radio broadcasting

21) 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

22) The RG number gives us information about _____.

- A) Optical fibers
- B) Twisted pairs
- C) **Coaxial cables**
- D) All the above

23) Transmission media are usually categorized as _____.

- A) **Guided or unguided**
- B) Fixed or unfixed
- C) Determinate or indeterminate
- D) Metallic or nonmetallic

24) The _____ is an association that sponsors the use of infrared waves.

- A) EIA
- B) **IrDA**
- C) FCC
- D) PUD

25) 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

26) The inner core of an optical fiber is _____ in composition.

- A) Copper
- B) Bimetallic
- C) Glass or plastic**
- D) Liquid

27) 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

28) In _____ propagation, the beam of propagated light is almost horizontal, and the lowdensity core has a small diameter compared to the cores of the other propagation modes.

- A) Single-mode**
- B) Multimode step-index
- C) Multimode graded-index
- D) Multimode single-index

29) _____ is the propagation method subject to the greatest distortion.

- A) Single-mode
- B) Multimode step-index**
- C) Multimode graded-index
- D) Multimode single-index

30) In _____ propagation, the core is of varying densities.

- A) Single-mode
- B) Multimode step-index
- C) Multimode graded-index**
- D) Multimode single-index

31) 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

32) Transmission media are closest to the _____ layer.

- A) Application
- B) Physical**
- C) Network
- D) Transport

33) 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

34) Optical fibers, unlike wire media, are highly resistant to _____.

- A) High-frequency transmission
- B) Low-frequency transmission
- C) Refraction
- D) Electromagnetic interference**

35) In _____ propagation, low-frequency radio waves hug the earth.

- A) Space
- B) Ground**
- C) Sky
- D) Line of sight

36) 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

37) A parabolic dish antenna is a(n) _____ antenna.

- A) Omnidirectional
- B) Bidirectional
- C) Horn
- D) Unidirectional**

38) The telephone service handled between two LATAs is called _____.

- A) An ILEC
- B) An IXC**
- C) A CLEC
- D) A POP

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

- A) 2000**
- B) 90
- C) 50
- D) 40

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40) The _____ is a device that connects n inputs to m outputs.

- A) **Crossbar**
- B) Crosspoint
- C) Modem
- D) RAM

41) 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

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

- A) 100
- B) **250**
- C) 500
- D) 1000

43) The _____ of a TSI controls the order of delivery of slot values that are stored in RAM.

- A) Crossbar
- B) Crosspoint
- C) Transceiver

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D) **Control unit**

44 Which of the following is a time-division switch?

- A) TSI
- B) TDM bus
- C) Crosspoint
- D) **(a) and (b)**

45 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

46) A telephone network is an example of a _____ network.

- A) Circuit-switched**
- B) Packet-switched
- C) Message-switched
- D) None of the above

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D)

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47) 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)

48) 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)**

49) 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**

50) 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

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D)

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51) 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

52) Data from a computer are _____; the local loop handles _____ signals.

- A) Digital; digital
- B) **Digital; analog**
- C) Analog; analog
- D) Analog; digital

53) To create a _____, combine crossbar switches in stages.

- A) TSI
- B) **Multistage switch**
- C) Crosspoint
- D) Packet switch

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D)

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54 A traditional telephone line has a bandwidth of _____.

- A) 2000 Hz
- B) 4000 Hz**
- C) 2000 MHz
- 4000 MHz

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D)

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55) 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

56) Which error detection method uses ones complement arithmetic?

- A) Simple parity check
- B) Checksum**
- C) Two-dimensional parity check
- D) CRC

57) Which error detection method consists of just one redundant bit per data unit?

- A) Two-dimensional parity check
- B) CRC
- C) Simple parity check**
- D) Checksum

58) Which error detection method involves polynomials?

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D)

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- A) **CRC**
- B) Simple parity check
- C) Two-dimensional parity check
- D) Checksum

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

- Single-bit
- Multiple-bit
- Burst**
- Recoverable

60 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

61) In cyclic redundancy checking, what is the CRC?

- A) The remainder**
- B) The divisor
- C) The quotient
- D) The dividend

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D)

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62) 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)**

63) 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

64) 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**
110111111

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D)

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65) 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

66) If the data unit is 111111 and the divisor 1010, what is the dividend at the transmitter?

- A) 1111110000
- B) **111111000**
- C) 111111
- D) 111111010

67) 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**

68) In CRC there is no error if the remainder at the receiver is _____.

- A) Nonzero

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D)

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- B) The quotient at the sender
- C) Equal to the remainder at the sender
- D) **Zero**

69 At the CRC generator, _____ added to the data unit after the division process.

0s are

1s are

The CRC remainder is

The polynomial is

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D)

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70) 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

71) 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**

72) The Hamming code is a method of _____.

- A) Error detection
- B) Error correction
- C) Error encapsulation
- D) **(a) and (b)**

73) 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

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D) A string of 1s

74 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**

75 Which error detection method can detect a burst error?

- A) The parity check
- B) Two-dimensional parity check
- C) CRC
- D) **(b) and (c)**

76) 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

77) HDLC is an acronym for _____.

- A) High-duplex line communication
- B) Half-duplex digital link combination

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- C) **High-level data link control**
- D) Host double-level circuit

78) 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

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

- 1 to 63
- 1 to 64
- 0 to 63**
- 0 to 64

80) 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) $n + 1$

81) When data and acknowledgment are sent on the same frame, this is called _____.

- A) Backpacking
- B) Piggypacking**

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- C) **Piggybacking**
- D) A good idea

82) 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)

83) ARQ stands for _____.

- A) **Automatic repeat request**
- B) Automatic retransmission request
- C) Acknowledge repeat request
- D) Automatic repeat quantization

84) 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**

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85) The shortest frame in HDLC protocol is usually the _____ frame.

- A) Information
- B) Management
- C) **Supervisory**
- D) None of the above

86) 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)

87) The HDLC _____ field defines the beginning and end of a frame.

- A) Address
- B) Control
- C) **Flag**
- D) FCS

88) A timer is set when _____ is (are) sent out.

- A) An ACK
- B) A NAK
- C) **A data frame**

- A)
- B) **C)**
- D)

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D) All the above

89) For Stop-and-Wait ARQ, for n data packets sent, _____ acknowledgments are needed.

- n - 1
- n + 1
- n 2n**

90) What is present in all HDLC control fields?

- A) N(R)
- B) N(S)
- C) Code bits
- D) **P/F bit**

91) If an FDMA network has eight stations, the medium bandwidth has _____ bands.

- A) 1
- B) 2
- C) 8**
- D) 16

92) In the _____ random-access method there is no collision.

- A) CSMA/CD
- B) CSMA/CA**
- C) ALOHA
- D) Token-passing

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93) 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

94) _____ requires one primary station and one or more secondary stations.

- A) Token ring
- B) Reservation
- C) **Polling**
- D) CSMA

95) In the p-persistent approach, when a station finds an idle line, it _____.

- A) Sends immediately
- B) Waits 1 s before sending
- C) Sends with probability $1 - p$
- D) **Sends with probability p**

96) 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**

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97) 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

98) _____ is a random-access protocol.

- A) FDMA
- B) CDMA
- C) **MA**
- D) Polling

99) 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
- 5
- 9

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100 A Walsh table for 16 stations has a chip sequence of _____ chips.

- A) 16
- B) 32
- C) 4
- D) 8

101) _____ is a controlled-access protocol.

- A) FDMA
- B) TDMA
- C) CSMA
- D) **Reservation**

102) _____ is (are) a channelization protocol.

- A) FDMA
- B) TDMA
- C) CDMA
- D) **All the above**

103) _____ is the access protocol used by traditional Ethernet.

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- C)
- D)

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- A) Token ring
- B) CSMA
- C) **CSMA/CD**
- D) CSMA/CA

104 The most primitive random access method is _____.

- A) Channelization
- B) ALOHA**
- CSMA
- Token passing

105 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

106) In the _____ random-access method, stations do not sense the medium.

- A) CSMA/CA
- B) ALOHA**
- C) CSMA/CD
- D) Ethernet

107) When a primary device asks a secondary device if it has data to send, this is called _____.

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- A) Backing off
- B) **Polling**
- C) Selecting
- D) Reserving

108) If a TDMA network has eight stations, the medium bandwidth has _____ bands.

- A) **1** B) 2
- C) 8
- D) 16

109) If a CDMA network has eight stations, the medium bandwidth has _____ bands.

- A) **1**
- B) 2
- 8
- 16

110) 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

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111) 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

112) 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

113) What is the efficiency of 4B/5B block encoding?

- A) 60 percent
- B) **80 percent**
- C) 20 percent
- D) 40 percent

114) 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**

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115 What is the efficiency of 8B/10B encoding?

- A) **80 percent**
- B) 20 percent
- C) 40 percent
- D) 60 percent

116) 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**

117) 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**

118) 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

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119 If an Ethernet destination address is 07-01-02-03-04-05, then this is a _____ address.

- A) Unicast
- B) Broadcast
- C) Multicast**
- Any of the above

120 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) 56 percent

121) 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**
- C) 7B-AA-C1-23-45-32
- D) 83-32-21-21-4D-34

122) Which of the following is a four-wire Gigabit Ethernet implementation?

- A) 1000Base-SX
- B) 1000Base-LX
- C) 1000Base-T**
- D) 1000Base-CX

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123) 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

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