



Kunal Jha
 Course: GATE
 Computer Science Engineering(CS)

- HOME
- MY TEST
- BOOKMARKS
- MY PROFILE
- REPORTS
- BUY PACKAGE
- NEWS
- TEST SCHEDULE

COMPUTER NETWORKS-1: (GATE - 2021) - REPORTS

OVERALL ANALYSIS COMPARISON REPORT **SOLUTION REPORT**

ALL(17) CORRECT(0) INCORRECT(0) SKIPPED(17)

Q. 1

? FAQ Have any Doubt ?

Consider the following statements:
 S_1 : Bit stuffing refers to inserting 0's in user data stream to differentiate it with the flag.
 S_2 : The exponential backoff/mechanism reduces the probability of collision on retransmission in ethernet.
 Which of the following is true?

A Only S_1

B Only S_2

C Both S_1 and S_2

Correct Option

Solution :

- (c)
- S_1 is true.
- The exponential backoff mechanism reduces the probability of collision on transmission in both ethernet and IEEE 802.11.

D None of these

QUESTION ANALYTICS

+

Q. 2

? FAQ Have any Doubt ?

Let $g(x) = x^3 + x^2 + 1$. Consider the information bits 110110. Find the codeword corresponding to these information bits if $g(x)$ is used as the generating polynomial.

A 110110000

B 110110111

Correct Option

Solution :

(b)

$$\begin{array}{r} 1101 \) 110110\text{ }0000 \\ \underline{1101} \\ \text{ }0001 \\ \times 0001 \\ \text{ }0000 \\ \times 0010 \\ \text{ }0000 \\ \times 0100 \\ \text{ }0000 \\ \times 1010 \\ \text{ }1101 \\ \times 111 \end{array}$$

C 11011010

D 110110101

QUESTION ANALYTICS

+

Q. 3

? FAQ Have any Doubt ?

Consider the following statements:

- S_1 : E4 : 50 : 3F : CD : 12 : EF is a unicast MAC address.
 S_2 : C3 : 43 : 36 : B2 : 9F : 12 is a multicast MAC address.

Which of the above is correct?

A Only S_1

B Only S_2

C Both S_1 and S_2

Correct Option

Solution :

- (c)
- All statements are correct.
- If second hexadecimal from left is even then it is even then MAC address in Unicast else multicast.

D None of these

QUESTION ANALYTICS

+

Q. 4

[FAQ](#)[Have any Doubt ?](#)

Which of the following statements is true about Binary exponential algorithm?

A It ensures that two nodes that experience a collision in a time slot will never collide with each other when they each retry that packet.

B It ensures that two nodes that experience a collision in a time slot will experience a lower probability of colliding with each others when they each retry that packet.

Correct Option

Solution :
(b)

C It can be used with slotted aloha but not with carrier sense multiple access.

D None of these

QUESTION ANALYTICS



Q. 5

[FAQ](#)[Have any Doubt ?](#)

Which of the timer is responsible for keeping the window size information flowing even if the other end closes its receiver window?

A Persistence timer

Correct Option

Solution :
(a)

- A retransmission timer is used when, expecting an acknowledgment from the other end.
- A persistence timer keep, window size information flowing even if the other end closes its receiver window.
- A keep alive timer detects when the other end on an otherwise idle connection crashed on reboots.
- A 2 MSL timer measures the timer a connection has been in the TIME_WAIT state.

B Keep alive timer

C Retransmission timer

D Time wait timer

QUESTION ANALYTICS



Q. 6

[FAQ](#)[Have any Doubt ?](#)

Let N stations share 40 kbps of pure aloha channel. Frame size is 512 bits which are send at every 40 seconds. The maximum value of N is _____.

575

Correct Option

Solution :
575

Maximum efficiency of pure aloha = 18.4%

$$\text{So, } N \times L = 0.184 \times \text{Channel capacity}$$

$$N \times \frac{512}{40} = 0.184 \times 40 \times 10^3$$

$$N = 575$$

QUESTION ANALYTICS



Q. 7

[FAQ](#)[Have any Doubt ?](#)

Assume the sender window size is 64 and using selective repeat ARQ. Then the sequence number of the frame to be send after sending 200th frame is _____.

72

Correct Option

Solution :
72

We know that for selective repeat

$$\text{ARQ} = 2^{n-1} = 64 = n = 7$$

Sequence numbers: 0 to 127

$$128 + x \text{ (Sequence number)} = 200$$

$$x = 72$$

Q. 8

FAQ Have any Doubt ?



Which one of the following devices reduce collision domain?

 A Repeater B Hub C Router

Correct Option

 D Switch

Correct Option

YOUR ANSWER - NA

CORRECT ANSWER - c,d

STATUS - SKIPPED

Solution :(c, d)
Router and Switch reduce collision domain.

Q. 9

FAQ Have any Doubt ?



In which of the following both the collision domain and broad cast domain reduced (choose all the options)

 A Hub B Repeater C Switch D Router

Correct Option

YOUR ANSWER - NA

CORRECT ANSWER - d

STATUS - SKIPPED

Solution :

(d)

	Broadcast domain	Collision domain
Repeater	Same	Same
Bridge	Same	Reduced
Router	Reduced	Reduced

Q. 10

FAQ Have any Doubt ?



The message 100100 is to be transmitted by taking the CRC polynomial $x^3 + x^2 + 1$ to protect it from errors. What must be message to be send after appending the CRC to the message?

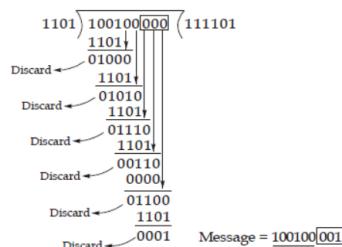
 A 100100001

Correct Option

Solution :

(a)

- CRC polynomial is the divisor and the message is dividend. The remainder is added to the message and then it is send.
- CRC is always 1 bit < divisor. 1st bit is always discarded.



Append the remainder to the message. It is called as CRC message.

 B 100100000 C 100100110

D 100100111

QUESTION ANALYTICS 

Item 1-10 of 17 « previous 1 2 next »



Kunal Jha
 Course: GATE
 Computer Science Engineering(CS)

[HOME](#)
[MY TEST](#)
[BOOKMARKS](#)
[MY PROFILE](#)
[REPORTS](#)
[BUY PACKAGE](#)
[NEWS](#)
[TEST SCHEDULE](#)

COMPUTER NETWORKS-1: (GATE - 2021) - REPORTS

[OVERALL ANALYSIS](#) [COMPARISON REPORT](#) **SOLUTION REPORT**
[ALL\(17\)](#) [CORRECT\(0\)](#) [INCORRECT\(0\)](#) [SKIPPED\(17\)](#)
Q. 11
[FAQ](#) [Have any Doubt?](#)


A computer on a 10-Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 4 Mbps. It is initially filled to capacity with 15 Megabits. How long can the computer transmit at the full 8 Mbps?

A 3.75 sec

[Correct Option](#)
Solution :

(a)

Burst length of computer is given by

$$S = \frac{C}{M - e}$$

Bucket capacity
Output rate Bucket fill rate

$$S = \frac{15 \times 10^6}{8 \times 10^6 - 4 \times 10^6} = 3.75 \text{ seconds}$$

B 3.55 sec

C 4.20 sec

D 3.46 sec

[QUESTION ANALYTICS](#)

Q. 12
[FAQ](#) [Have any Doubt?](#)


Consider (CSMA/CD) network that transmits data at the rate of 30 mbps over a 3 km cable with no repeater. If the minimum frame size for this network is 2000 bytes. What is the speed of signal in km/s?

A 10^6
B 11250

[Correct Option](#)
Solution :

(b)

$$B = 30 \text{ mbps} = 30 \times 10^6 \text{ bps}$$

$$\text{Distance } (d) = 3 \text{ km} = 3000 \text{ m}$$

$$\text{Length of frame } (l) = 2000 \text{ bytes}$$

Let the velocity be V m/s

$$L = 2 \times T_p \times B$$

$$= 2 \times \left(\frac{d}{v} \right) \times B$$

$$2000 \times 8 = 2 \times \frac{3000}{V} \times 30 \times 10^6$$

$$V = 11250 \text{ km/s}$$

C 9450

D 10^7
[QUESTION ANALYTICS](#)

Q. 13
[FAQ](#) [Have any Doubt?](#)


Consider the following statements:

1. IP packets from the same source to the same destination can take different routes in the network.
2. A computer can have multiple MAC address.
3. A computer can have multiple IP address at different instance of time.

A Only 1

B Both 2 and 3

C Both 1 and 2

D All of these

[Correct Option](#)

Solution :
 (d)
 All the statements are correct.

QUESTION ANALYTICS

Q. 14

? FAQ  Have any Doubt?



A 1000 km long trunk is used to transmit 64 bytes frame and using GoBack-N protocol for the flow control. If the propagation speed is 6 μ/sec/km and bandwidth is 2 Mbps then the minimum number of bit required to represent N is _____.

6

Correct Option

Solution :

6

$$\begin{aligned} \text{Propagation speed} &= 6 \mu\text{sec}/\text{km} \\ \text{Required to travel } 1000 \text{ km} &= 6 \text{ msec} \\ \text{Round trip time (RTT)} &= 2 \times 6 \text{ msec} = 12 \text{ msec} \\ 1 \text{ sec} \dots 2 \times 10^6 \text{ bits} \\ 12 \text{ msec} \dots ? \\ &= 12 \times 10^{-3} \times 2 \times 10^6 \text{ bits} = 2400 \text{ bits} \\ \text{Frames} &= \left[\frac{2400}{64 \times 8} \right] = 49 = N \\ \text{Sequence bit required} &= \lceil \log_2(1+N) \rceil = \lceil \log_2(1+49) \rceil = 6 \text{ bits} \end{aligned}$$

QUESTION ANALYTICS

Q. 15

? FAQ  Have any Doubt?



In a network that uses Go-Back 3 sliding window protocol for maintaining flow control. It is observed that every 5th packet that has been sent through the network has lost. The number of total packet needs to send for transmitting 10 such packet through the network is _____.

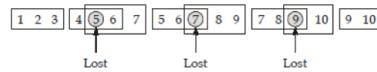
18

Correct Option

Solution :

18

Given window size = 3 and every 5th packet lost



Total packet send = 18

QUESTION ANALYTICS

Q. 16

? FAQ  Have any Doubt?



In Go-Back N ARQ and Stop and Wait ARQ, the receiver window size = 1.
 Which of the following is/are true regarding given data for the protocols?

A It accepts out of order frames.

Correct Option

B It accepts in order Frames.

Correct Option

C In Go-Back N, N represents the number of bits required to uniquely identify the packets in the LAN.

Correct Option

D Stop and wait is less efficient than Go-back N.

Correct Option

YOUR ANSWER - NA

CORRECT ANSWER - b,d

STATUS - SKIPPED

Solution :

(b, d)
 Go-back N and Stop and wait do not accept out of order frames. Selective repeat does.
 Stop and wait is less efficient than Go-back N it is very much true.

QUESTION ANALYTICS

Q. 17

? FAQ  Have any Doubt?



Which of the following statement(s) is/are true?

A Circuit switching is a store and forward technique.

Correct Option

B Packet switching is faster compared to circuit switching.

Correct Option

6

C Packet switching wastes less resources compared to circuit switching

Correct Option

D Packet switching is not a store and forward technique.

YOUR ANSWER - NA

CORRECT ANSWER - b,c

STATUS - SKIPPED

Solution :

(b,c)

- Circuit switching is not a store and forward technique and path is predefined and router need not apply any routing algorithm until which packet would have to be stored at router. But packet switching is a store and forward technique.
- Packet switching is faster because it has only 1 phase (data transfer), whereas circuit switching is slower because it is having 3 phases (connection establishment, data transfer and connection release).



QUESTION ANALYTICS



Item 11-17 of 17 « previous 1 2 next »



Kunal Jha
 Course: GATE
 Computer Science Engineering(CS)

- HOME
- MY TEST
- BOOKMARKS
- MY PROFILE
- REPORTS
- BUY PACKAGE
- NEWS
- TEST SCHEDULE

COMPUTER NETWORKS-2: (GATE - 2021) - REPORTS

OVERALL ANALYSIS COMPARISON REPORT **SOLUTION REPORT**

ALL(17) CORRECT(0) INCORRECT(0) SKIPPED(17)

Q. 1

? FAQ Have any Doubt?



Consider the following statements:

S₁ : In IPv4 fragmentation done by intermediate router.
 S₂ : In IPv4 check sum is used in error detecting technique only for header.

Which of the above statements is/are correct?

A S₁ only

B S₂ only

C S₁ and S₂

Correct Option

D None of these

QUESTION ANALYTICS



Q. 2

? FAQ Have any Doubt?



Which of the following is true?

A When an IP router between two ethernet segments forwards an IP packet, it does not modify the destination MAC address.

B When an IP router between two ethernet segment forwards an IP packet, it does not modify the destination IP address.

Correct Option

C If there are some errors in routing table at any router, then it is possible that a packet loops forever in IPv4.

D Both (a) and (b)

QUESTION ANALYTICS



Q. 3

? FAQ Have any Doubt?



Identify the correct sequence in which, the following packets are transmitted on the network by a host when a browser requests a web page from a remote server, assuming that the host has just been restarted.

A DNS query, HTTP GET request, TCP SYN

B HTTP GET request, DNS query, TCP SYN

C DNS query, TCP SYN, HTTP GET request

Correct Option

D TCP SYN, DNS query, HTTP GET request

QUESTION ANALYTICS



Q. 4

? FAQ Have any Doubt?



Which of the following correctly states the difference between a switch and a hub?

- I. Switch transmit a signal to all the device connected to it, hub transmit a signal only to the intended port.
- II. Switch works in physical layer, hub works at data link layer.
- III. Switch is a smart device while hub is a dumb device.

A I only

B II and III only

C I and III only

D III only

Correct Option

Solution :

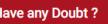
(d)

- Hub is a passive device and switch is an active device. Active device maintains information about ports. Consequently, transmits only to a intended port.
- Hub works on physical layer while switch on DLL.
- Hub is a dumb device. Hence only statement III is correct.

 QUESTION ANALYTICS



Q. 5



Match the following between Column-A and Column-B

Column-A	Column-B
(i) TCP	M. Physical Layer
(ii) Repeaters	N. Network layer
(iii) Routers	P. Transport layer
(iv) SMTP	Q. Application layer
(i) (ii) (iii) (iv)	
(a) M N P Q	
(b) P M N Q	
(c) P N M Q	
(d) N P Q M	

A a

B b

Correct Option

Solution :

(b)

- TCP : Transport layer
 Repeaters : Physical layer
 Routers : Network layer
 SMTP : Application layer

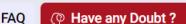
C c

D d

 QUESTION ANALYTICS



Q. 6



Consider an IPv4 network each host can generate packet with a rate of 600 packet per second. If each packet in network is identified by unique identification number 48 bits, then the most appropriate host wrap around time for generating packet will be _____ (in sec). [Closest integer value]

110

Correct Option

Solution :

110

Size of IP address of IPv4 is 32 bits

So, maximum host that can be present on network = 2^{32}

Total number of packet generated by all the hosts in a sec = $2^{32} \times 600$

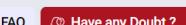
Unique identification number of 48 bits

$$\text{So, wrap around time} = \frac{2^{48}}{2^{32} \times 600} = \lceil 109.22 \rceil = 110 \text{ sec}$$

 QUESTION ANALYTICS



Q. 7



Consider an instance of TCP's Additive Increase Multiplicative Decrease (AIMD) algorithm when the window at the start of slow start phase is 1 MSS and the threshold at the start is 16 MSS. Assume time out occurs during 8th transmission. What is the congestion window size after 10th RTT? _____ (in MSS)

4

Correct Option

Solution :

4



RTT	1	2	3	4	5	6	7	8	9	10
Congestion Window	1	2	4	8	16	17	18	19	1	2
Threshold	16	16	16	16	16	16	16	16	9	9

So after 10RTT congestion window size = 4 MSS.

QUESTION ANALYTICS

Q. 8

? FAQ

Have any Doubt ?



Which of the following is stateful application layer protocol?

A TCP

B FTP

Correct Option

C POP3

Correct Option

D HTTP

YOUR ANSWER - NA

CORRECT ANSWER - b,c

STATUS - SKIPPED

Solution :

(b, c)

HTTP is stateless protocol. FTP has data and control connection so it is stateful. POP3 is application layer protocol and gets its state with the help of TCP. Although TCP is stateful but it is not application layer protocol.

QUESTION ANALYTICS

Q. 9

? FAQ

Have any Doubt ?



Which of the following is NOT true?

A BGP is an Intra Domain Protocol

Correct Option

B RIP is a Path Vector Routing algorithm

Correct Option

C OSPF is a Distance Vector Routing algorithm

Correct Option

D RIP is Intra Domain Routing Protocols

YOUR ANSWER - NA

CORRECT ANSWER - a,b,c

STATUS - SKIPPED

Solution :

(a, b, c)

Intra Domain Routing Protocols:

(i) RIP: Routing Information Protocol (D.V.R. Algorithm)

(ii) OSPF: Open Shortest Path First (Link State Routing Algorithm)

Inter domain protocols:

(i) BGP: Border Gateway Protocol (Path Vector Routing Algorithm)

QUESTION ANALYTICS

Q. 10

? FAQ

Have any Doubt ?



Consider the following statements:

S_1 : HTTP resources are identified and located on the network by uniform resource locators.

S_2 : MIME extension used for sending graphics and multimedia in SMTP.

S_3 : FTP may run in active or passive mode which determine how the data connection is established.

Which of the above statements are correct?

A S_1 and S_2

B S_1 only

C S_1 and S_3

D All of the above

Correct Option

Solution :

(d)

All the statements S_1 , S_2 and S_3 are correct.

QUESTION ANALYTICS





Kunal Jha
 Course: GATE
 Computer Science Engineering(CS)

- HOME
- MY TEST
- BOOKMARKS
- MY PROFILE
- REPORTS
- BUY PACKAGE
- NEWS
- TEST SCHEDULE

COMPUTER NETWORKS-2: (GATE - 2021) - REPORTS

OVERALL ANALYSIS COMPARISON REPORT **SOLUTION REPORT**

ALL(17) CORRECT(0) INCORRECT(0) SKIPPED(17)

Q. 11

? FAQ



Host A is connected to a router R_1 . R_1 is connected to another router R_2 and R_2 is connected to host B.



Suppose that a TCP message that contains 1000 bytes of data including 20 bytes of TCP header is passed to the IP layer at the host A for delivery to B. Maximum frame size between link A- R_1 is 1500 bytes including a 15-byte frame header. Link R_1-R_2 can support a maximum frame size 700 bytes including 10-byte frame header and link R_2 -B can support maximum frame size of 600 bytes including a 12-byte frame header. Which of the following is correct about the total length, DF, MF and fragment offset fields of the IP header in the last packet transmitted over the link R_1-R_2 ? [Assume 20 B of IP header]

- A** Length = 600; DF = 0; MF = 0; Offset = 60
- B** Length = 128; DF = 0; MF = 0; Offset = 71
- C** Length = 336; DF = 0; MF = 0; Offset = 83
- D** Length = 356; DF = 0; MF = 0; Offset = 83

Correct Option

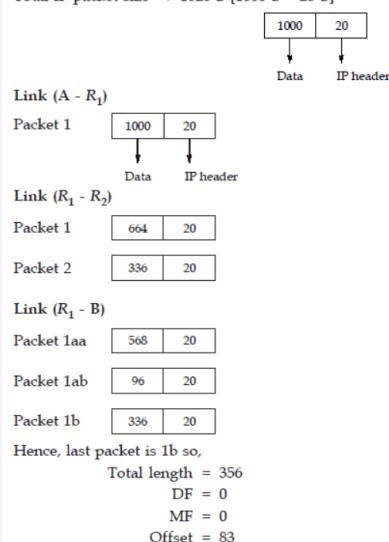
YOUR ANSWER - NA

CORRECT ANSWER - d

STATUS - SKIPPED

Solution :

(d) Frame header are the headers attached at DLL. Since fragmentation is at network layer. Hence
 MTU for A- R_1 \rightarrow 1485 B
 MTU for R_1-R_2 \rightarrow 690 B
 MTU for R_2 -B \rightarrow 588 B
 Total IP packet size \rightarrow 1020 B [1000 B + 20 B]



Total length = 356
 DF = 0
 MF = 0
 Offset = 83

QUESTION ANALYTICS



Q. 12

? FAQ



Consider 2 host A and B are connected with a channel of bandwidth of 8 kHz. Channel is not error free and signal to noise ratio is 30 dB. Assume there is negligible propagation time. The data rate of the channel is

- A** 79.70 kb
- B** 48.83 kb
- C** 63.66 kb
- D** 91.30 kb

Correct Option

YOUR ANSWER - NA

CORRECT ANSWER - a

STATUS - SKIPPED

Solution :

(a) Bandwidth = 8 kHz
 Signal to noise ratio = 30 dB

$$30 \text{ dB} = 10 \log_{10} \left(\frac{S}{N} \right)$$

$$\left(\frac{S}{N} \right) = 10^3 = 1000$$

Since channel is erroneous

$$\begin{aligned} \text{So, Maximum data rate} &= B \log_2 \left(1 + \frac{S}{N} \right) \\ &= 8 \times 10^3 \times \log (1 + 1000) = 79.73 \text{ k bits} \end{aligned}$$

QUESTION ANALYTICS

Q. 13

? FAQ

Have any Doubt ?



Match the List-I with List-II and select the correct answer using the codes given below the lists:

List-I

A. FIN

List-II

1. Sent from the receiver to the sender when a packet is sent to a particular host that was not expecting it.
2. Process packets as they are received instead of buffering them.
3. It is used in the last packet.
4. When this flag is set then data may reach out of order.

B. URG

C. PSH

D. RST

A	B	C	D
(a) 1	2	3	4
(b) 3	4	2	1
(c) 1	3	2	4
(d) 3	2	4	1

A a

B b

Correct Option

Solution :

(b)

C c

D d

QUESTION ANALYTICS

Q. 14

? FAQ

Have any Doubt ?



Consider a very large network of 5000 routers. Sender and receiver are connected with this network. Sender sends data to receiver and after some unit of time sender receives ICMP time exceeded message for the same transmitted packet. The maximum number of routers that can be travelled by packets when ICMP message reaches back to sender is _____.

509

Correct Option

Solution :

509

TTL uses 8-bit in IP header which can travel maximum of 255 routers.

$$\begin{aligned} \text{Total routers travelled} &= 255 \text{ (going forward)} + 254 \text{ (time exceeded message coming back)} \\ &= 509 \end{aligned}$$

QUESTION ANALYTICS

Q. 15

? FAQ

Have any Doubt ?



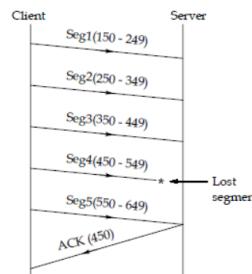
If TCP client sends 5 segments each of 100 bytes to a server with a sequence number starting from 150. All the segments reached successfully except 4th segment. The acknowledgment number expected from the server is _____.

450

Correct Option

Solution :

450



So, ACK (450) will be received from the server.

Q. 16

[FAQ](#)[Have any Doubt ?](#)

The router interface has the following IP address on Ethernet0: 174.17.2.1/23. Which of the following can be valid host IDs on the LAN interface attached to the router?

 A 174.17.1.100 B 174.17.1.198 C 174.17.2.255

Correct Option

 D 174.17.3.0

Correct Option

YOUR ANSWER - NA

CORRECT ANSWER - c,d

STATUS - SKIPPED

Solution :

(c, d)

174.17.2.1/23

174.17.00000010.00000001

Therefore the host id range is 174.17.2.1 to 174.17.3.254 and thus only option (c) and option (d) are valid.

Q. 17

[Have any Doubt ?](#)

Which of the following are the connection less protocols?

 A IP

Correct Option

 B ICMP

Correct Option

 C UDP

Correct Option

 D TCP

YOUR ANSWER - NA

CORRECT ANSWER - a,b,c

STATUS - SKIPPED

Solution :

(a, b, c)

IP, ICMP, UDP are the connectionless protocols while TCP is Connection oriented protocol.



Kunal Jha

Course: GATE
Computer Science Engineering(CS)

HOME



MY TEST



BOOKMARKS



MY PROFILE



REPORTS



BUY PACKAGE



NEWS



TEST SCHEDULE

COMPUTER NETWORKS (GATE - 2021) - REPORTS

OVERALL ANALYSIS

COMPARISON REPORT

SOLUTION REPORT

ALL(33)

CORRECT(0)

INCORRECT(0)

SKIPPED(33)

Q. 1

Have any Doubt?



Mail access starts with the client when the user wants to check their e-mail or download the e-mail from the

 A Mail server B Mail box

Correct Option

Solution :

(b)
The starting of access to the mail is initiated with the downloading of e-mails from the mail box.
The starting place of e-mails is the mail box of the client. C IP server D Internet

QUESTION ANALYTICS



Q. 2

FAQ Have any Doubt?



A TCP transmission host X to Y, after receiving the ACK with ACK number 20, Host X sends packets with sequence numbers 20, 30, 40, 50, 60, 70, 80, 90 and 100. Sometime later, it receives ACK's with the sequence numbers 40, 40, 60, 60, 60, 60, 60. Assume that X sends no additional data segments in the mean time. What sequence number would you expect in the next packet sent by X?

 A 70 B 60

Correct Option

Solution :

(b)
In TCP, the acknowledgment number (ACK) is the sequence number of the next packet (byte) the receiver expect to receive. C 50 D 100

QUESTION ANALYTICS



Q. 3

Have any Doubt?



Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I

- A. Data link layer
- B. Network layer
- C. Transport layer
- D. Application layer

List-II

- 1. Flow control
- 2. Node to node delivery
- 3. Mail services
- 4. Routing

Codes:

A B C D

(a) 2 1 4 3

(b) 2 4 1 3

(c) 2 1 3 4

(d) 2 4 3 1

 A a B b

Correct Option

Solution :

 C c D d

QUESTION ANALYTICS



Q. 4

[Have any Doubt ?](#)

In a communication network, a packet of length L bits takes link L_1 with a probability of p_1 , link L_2 with a probability of p_2 , link L_3 with a probability of p_3 .
 Link L_1 , L_2 and L_3 have bit error probability of b_1 , b_2 and b_3 respectively.
 The probability that the packet will be received without error via either L_1 , L_2 or L_3 is

A $(1 - b_1)^L p_1 + (1 - b_2)^L p_2 + (1 - b_3)^L p_3$

Correct Option

Solution :

- (a) Number of bits in a packet = L bits
- No bit error probability for link L_1 = $(1 - b_1)$
- Similarly, no bit error probability for link L_2 = $(1 - b_2)$
- Also, no bit error probability for link L_3 = $(1 - b_3)$
- Thus, probability without error:

$$(1 - b_1)^L p_1 + (1 - b_2)^L p_2 + (1 - b_3)^L p_3$$

B $(1 - b_1)^L (1 - b_2)^L (1 - b_3)^L p_1 p_2 p_3$

C $[1 - (b_1 + b_2 + b_3)] P_1 P_2 P_3$

D None of the above

QUESTION ANALYTICS



Q. 5

[Have any Doubt ?](#)

For n devices in a network, _____ number of duplex-mode links are required for a mesh topology.

A $n(n + 1)$

B $n(n - 1)$

C $\frac{n(n + 1)}{2}$

D $\frac{n(n - 1)}{2}$

Correct Option

Solution :

- (d)
- For n devices in a network, $\frac{n(n - 1)}{2}$ number of duplex-mode links are required for a mesh topology.

QUESTION ANALYTICS



Q. 6

[FAQ](#) [Have any Doubt ?](#)

A network with bandwidth of 10 Mbps can pass only an average of 15,000 frames per minute with each frame carrying an average of 8,000 bits. What is the throughput of this network?

A 2 Mbps

Correct Option

Solution :

- (a)
- A network with 10 Mbps bandwidth can pass 15,000 frames and each frame carries 8,000 bit i.e. 120,000,000 bits per minute.

i.e. $\frac{120,000,000}{60} = 2,000,000 = 2 \text{ Mbps}$

So, option (a) is correct.

B 60 Mbps

C 120 Mbps

D 10 Mbps

QUESTION ANALYTICS



Q. 7

[Have any Doubt ?](#)

Ethernet bus is based on

A Collision avoidance (CA) bus using tokens.

B Reservation bus.

C Collision avoidance (CA) bus allocated (fixed) time slots.

D Collision bus collision detect, random backoff, LWT.

Correct Option

Solution :

(d)
CSMA CD (Carrier Sense Multiple Access with Collision Detection) method is used in ethernet.

 QUESTION ANALYTICS



Q. 8

 Have any Doubt ?



Match List-I with List-II and select the correct answer using the codes given below the lists:

List-I **List-II**

- | | |
|----------------------|---------|
| A. Application layer | 1. TCP |
| B. Transport layer | 2. HDLC |
| C. Network layer | 3. HTTP |
| D. Data link layer | 4. BGP |

Codes:

A B C D

(a) 2 1 4 3

(b) 3 4 1 2

(c) 3 1 4 2

(d) 2 4 1 3

A a

B b

C c

Correct Option

D d

 QUESTION ANALYTICS



Q. 9

 FAQ  Have any Doubt ?



Given a mask M = 255.255.255.240. How many subnet bits are required for given mask M? _____.

4

Correct Option

Solution :

4

Given mask is 255.255.255.240

i.e. 255.255.255.11110000

Number of mask bits are $24 + 4 = 28$ bits

To find number of subnet bits look at the last 8 bits of subnet mask. The number of subnet bits are the number of 1's in the final byte.

So, answer is 4.

 QUESTION ANALYTICS



Q. 10

 FAQ  Have any Doubt ?



Determine the maximum length to the cable (in km) for transmitting data at a rate of 250 Mbps in an Ethernet LAN with frames of size 5,000 bits. Assume the signal speed in the cable to be 2,00,000 km/s.

2

Correct Option

Solution :

2

Data should be transmitted at the rate of 250 Mbps.

Transmission Time = $2 \times \text{Propagation Time}$

$$\Rightarrow 5000 / (250 \times 1000000) = 2 \times \text{length} / 200000$$

$$\Rightarrow \text{Length} = 2 \text{ km (max)}$$

 QUESTION ANALYTICS





Kunal Jha
 Course: GATE
 Computer Science Engineering(CS)

[HOME](#)
[MY TEST](#)
[BOOKMARKS](#)
[MY PROFILE](#)
[REPORTS](#)
[BUY PACKAGE](#)
[NEWS](#)
[TEST SCHEDULE](#)

COMPUTER NETWORKS (GATE - 2021) - REPORTS

[OVERALL ANALYSIS](#)
[COMPARISON REPORT](#)
[SOLUTION REPORT](#)
[ALL\(33\)](#)
[CORRECT\(0\)](#)
[INCORRECT\(0\)](#)
[SKIPPED\(33\)](#)
Q. 11
[Have any Doubt ?](#)


If there are five routers and six networks in intranet using link state routing, how many routing tables are there?

5
[Correct Option](#)
Solution :

5

Routers have routing tables to transmit packets selectively to other networks. These routers apply shortest path algorithms to choose the links on which, a packet is to be forwarded, so that it can reach the destination in covering minimum number of hops. If there are 5 routers, then there should be 5 routing tables as well.

QUESTION ANALYTICS

Q. 12
[Have any Doubt ?](#)


A node X on a 10 Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 2 Mbps. Token bucket is initially filled with 16 megabits. The maximum duration taken by X to transmit at full rate of 10 Mbps is _____ secs.

2
[Correct Option](#)
Solution :

2

In given question token bucket is filling @ 2 Mbps.

Token bucket capacity (b) = 16 Mb

Maximum possible transmission rate (M) = 10 Mbps.

$$\text{Maximum duration taken by } X \text{ for transmission} = \frac{b}{(M-r)} \\ = \frac{16}{(10-2)} = 2 \text{ Seconds}$$

QUESTION ANALYTICS

Q. 13
[Have any Doubt ?](#)


Consider GBN protocol having sender window size of 8. The minimum number of bits require for sequence is _____.

4
[Correct Option](#)
Solution :

4

In GBN, receiver window size (wR) = 1

As we know, number of sequence numbers required = sender window size (wS) + receiver window size (wR) = $8 + 1 = 9$

So minimum number of bits required = ceil of $\log_2 9 = 4$.

QUESTION ANALYTICS

Q. 14
[FAQ](#)
[Have any Doubt ?](#)


Which of the following statement is/are correct regarding IPv4 Datagram Header?

- A The minimum value for HLEN field is 5 and the maximum is 20.
- B Total Length field has a minimum value 20 bytes and the maximum is 65,516 bytes.
- C Fragment Offset is maximum value of 65,514 bytes.
- D None of these

[Correct Option](#)
YOUR ANSWER - NA
CORRECT ANSWER - c
STATUS - SKIPPED
Solution :

(c)

Q. 15

Have any Doubt ?



Which of the following statement(s) is/are TRUE?

A Using a process called "store and forward," SMTP moves your e-mail on and across networks.

Correct Option

B Network File System (NFS) allows remote hosts to mount file systems over a network and interact with those file systems as though they are mounted locally.

Correct Option

C DHCP Server uses the UDP port 67 and DHCP client uses UDP port 68.

Correct Option

D Typically, SNMP uses UDP as its transport protocol. The well known UDP ports for SNMP traffic are 61 (SNMP) and 62 (SNMPTRAP). It can also run over TCP, Ethernet, IPX, and other protocols.

YOUR ANSWER - NA

CORRECT ANSWER - a,b,c

STATUS - SKIPPED

Solution :

(a, b, c)
Typically, SNMP uses UDP as its transport protocol. The well known UDP ports for SNMP traffic are 61 (SNMP) and 62 (SNMPTRAP). It can also run over TCP, Ethernet, IPX, and other protocols.
So, only statement (d) is false.

Q. 16

Have any Doubt ?



Which of the following statement(s) is/are TRUE?

A Socket() creates a new socket of a certain socket type, identified by an integer number, and allocates system resources to it.

Correct Option

B Bind() is typically used on the client side, and associates a socket with a socket address structure, i.e. a specified local port number and IP address.

C Listen() is used on the server side, and causes a bound TCP socket to enter listening state.

Correct Option

D Connect() is used on the client side, and assigns a free local port number to a socket.

Correct Option

YOUR ANSWER - NA

CORRECT ANSWER - a,c,d

STATUS - SKIPPED

Solution :

(a, c, d)
Bind() is typically used on the server side, and associates a socket with a socket address structure, i.e. a specified local port number and IP address. So, only statement (b) is false.

Q. 17

Have any Doubt ?



What is the maximum window size for data transmission Using Selective Repeat protocol with n-bit frame sequence number?

A 2^n

B $2^n + 1$

C $2^n - 2$

D $2^n - 1$

Correct Option

Solution :
(d)

If n is the number of bits in the frame sequence field then, the window size of sender = $\frac{2^n}{2} = 2^{n-1}$

Window size of receiver = $\frac{2^n}{2} = 2^{n-1}$

Q. 18

Have any Doubt ?



An image is 1024×800 pixels with 3 bytes/pixel. Assume the image is uncompressed. How long does it take to transmit it over a 10 Mbps Ethernet?

A 196.6 seconds

B 19.66 seconds

C 1.966 seconds

Correct Option

Solution :

(c)

$$\text{Transmission time} = \frac{L}{B}$$

for L (Size) -

Image = 1024×800 pixels

Number of byte = $3 \times 1024 \times 800$

$$\text{Hence, } TT = \frac{3 \times 1024 \times 800 \times 8}{10 \times 10^6} = 1.9660800 \text{ seconds}$$

D 0.1966 seconds

 QUESTION ANALYTICS



Q. 19

? FAQ

Have any Doubt ?



Which of the following is not a valid multi-cast MAC address?

A 01:00:5E:00:00:00

B 01:00:5E:00:00:FF

C 01:00:5E:00:FF:FF

D 01:00:5E:FF:FF:FF

Correct Option

Solution :

(d)

A multi-cast addressed frame is either flooded out all ports (if no multi-cast optimization is configured) or sent out only the ports interested in receiving the traffic.

The range of multi-cast MAC Address lie between 01-00-5E-00-00-00 to 01-00-5E-7F-FF-FF.

So, option (d) is correct.

 QUESTION ANALYTICS



Q. 20

? FAQ

Have any Doubt ?



Which of the following statement(s) is/are correct regarding IPv4 Header?

1. The maximum possible value of time to live (TTL) in IPv4 is 256.
2. The maximum value of fragment offset is 65,535.
3. The maximum number of IPv4 router address addresses that can be listed in the record route (RR) option field is 38.

A 1 and 2 only

B 1 and 3 only

C 2 and 3 only

D None of these

Correct Option

Solution :

(d)

In IPv4 Header,

The maximum possible value of time to live (TTL) in IPv4 is 255.

The maximum value of fragment offset is 65,535.

In IPv4 frame format there are 40 bytes of option field, out of which only 38 bytes can be used, 2 bytes are reserved . Also one IPv4 address is of 4 bytes.

Thus maximum IPv4 address that can be held = $\frac{38}{4} = 9$. So, none statements are correct.

Option (d) is true.

 QUESTION ANALYTICS





Kunal Jha
 Course: GATE
 Computer Science Engineering(CS)

HOME

MY TEST

BOOKMARKS

MY PROFILE

REPORTS

BUY PACKAGE

NEWS

TEST SCHEDULE

COMPUTER NETWORKS (GATE - 2021) - REPORTS

OVERALL ANALYSIS COMPARISON REPORT **SOLUTION REPORT**

ALL(33) CORRECT(0) INCORRECT(0) SKIPPED(33)

Q. 21

Have any Doubt?



Given the IP address 201.14.78.65 and the subnet mask 255.255.255.224. What is the subnet address?

A 201.14.78.32

B 201.14.78.64

Correct Option

Solution :

(b) Subnet address is the ANDing between IP address and subnet Mask.

201 14 78 01000001

255 255 255 11100000

201 14 78 01000000

or 201.14.78.64

C 201.14.78.65

D 201.14.78.224

QUESTION ANALYTICS



Q. 22

? FAQ Have any Doubt?



An IP datagram of length (including a header of 20 bytes) 1800 bytes needs to cross an Ethernet followed by a WAN to reach its destination. The MTU for Ethernet is 1500 bytes. For the WAN, the MTU is given to be 576 bytes. The more-fragment value, fragment offset value and total length field value stored in the third fragment are _____.

A 1, 69, and 375 respectively

B 1, 138, and 396 respectively

Correct Option

Solution :

(b)

The datagram of 1800 bytes cannot be carried in one unit by Ethernet. Hence 2 fragments are required.

	Data	Header	Total
Frag 1	1480	20	1500 bytes
Frag 2	300	20	320 bytes
1780 bytes of data			

At the entry to the WAN, the Router has to further fragment FRAG 1. FRAG 2 goes through the WAN as it is.

Since every sub-fragment must have an IP header of 20 bytes, the WAN can carry a maximum data size of 556 bytes. However 556 is not divisible by 8, as required the Fragment Offset. Hence we decide to send 552 bytes of data in the first sub-fragment of FRAG 1.

	Data	Header	Total
Frag 1 A	552	+	572
Frag 1 B	552	+	572
Frag 1 C	376	+	396
1480 bytes of data			

Hence at destination would reach 4 fragments namely FRAG 1A, FRAG 1B, FRAG 1C, And FRAG 2.

	MFB	FO	TL
FRAG 1A	1	0	572
FRAG 1B	1	69	572
FRAG 1C	1	138	396
FRAG 2	0	185	320

So, option (b) is correct.

C 0, 185, and 320 respectively

D 0, 18, and 572 respectively

QUESTION ANALYTICS



Q. 23

Have any Doubt?



Given code word 1110001010 is to be transmitted with even parity check bit. The encoded word to be transmitted for this code is

A 11100010101

Correct Option

Solution :

(a)
In the given code word there are five '1's to make it even one extra 1 is required.

B 11100010100

C 1110001010

D 111000101

QUESTION ANALYTICS



Q. 24

? FAQ

Have any Doubt ?



In the framing we are sending the data with stuffed bits. The bit pattern used in the starting of the frame and another bit pattern is used in the ending of the frame. The actual data that we are sending is 011101101011011011. The stuffed data we are sending is 0111001101011001011000101100011001111. What are the bit patterns in starting and end of the frame?

A 0111, 1111

Correct Option

Solution :

(b)
If we take option (b) as an example. The flag patterns are 01110, 01111. To quickly identify the data we should stuff 0 after two 1's. The actual data is 0111011010110110011. The stuffed data is 01101011001011001011000110. After the start and end delimiter pattern, the data would be 0111001101011001011000101100011001111.

C 011001, 01111

D 01110, 1111

QUESTION ANALYTICS



Q. 25

Have any Doubt ?



Consider a LAN with four nodes S1, S2, S3 and S4.

Time is divided into fixed-size slots, and a node can begin its transmission only at the beginning of a slot.

A collision is said to have occurred if more than one node transmit in the same slot.

The probabilities of generation of a frame in a time slot by S1, S2, S3 and S4 are 0.1, 0.2, 0.3 and 0.4, respectively.

The probability of sending a frame in the first slot without any collision by any of these four stations is _____. (Upto 2 decimal place)

0.44 (0.44 - 0.46)

Correct Option

Solution :

0.44 (0.44 - 0.46)

The probability of sending a frame in the first slot without any collision by any of these four stations is sum of following 4 probabilities that are = Probability that S1 sends a frame and no one else does + Probability that S2 sends a frame and no one else does + Probability that S3 sends a frame and no one else does + Probability that S4 sends a frame and no one else does
 $= 0.1 * (1 - 0.2) * (1 - 0.3) * (1 - 0.4) + (1 - 0.1) * 0.2 * (1 - 0.3) * (1 - 0.4) + (1 - 0.1) * (1 - 0.2) * 0.3 * (1 - 0.4)$
 $+ (1 - 0.1) * (1 - 0.2) * (1 - 0.3) * 0.4 = 0.4404$

QUESTION ANALYTICS



Q. 26

Have any Doubt ?



In Go-back N flow control protocol every 6th packet is lost. If we have to send 11 packets. How many transmissions will be needed?

17

Correct Option

Solution :

17

In Go back N, if we don't receive acknowledgment for a packet, whole window of that packet is sent again. As a packet is received window is slided.

Here, window size is 3. Initially window will contain 1, 2, 3 then as acknowledgment of 1 is received window slides so 4 is transmitted. Now, when 4th packet's acknowledgment is received 7th packet is sent and when 5th packet's acknowledgment is received 8th packet is sent. Now, as acknowledgment of 6 is not received so the window of 6 i.e. 6, 7, 8 packets are retransmitted. Now the 6th packet from there is 9, so 9, 10 will be retransmitted.

These are the serial transmissions of packets: 1 2 3 4 5 6 7 8 9 10 11 9 10 11 . Hence total 17 transmissions are needed.

QUESTION ANALYTICS



Q. 27

[FAQ](#)
[Have any Doubt?](#)

Consider a network path with three links.
 Link 1 – Speed : 10 Gbps, Propagation Delay : 40 ms
 Link 2 – Speed : 2 Gbps, Propagation Delay : 5 ms
 Link 3 – Speed : 2 Gbps, Propagation Delay : 10 ms
 Assume processing delay to be zero. A data packet of 500 KB is sent from a source to a destination via the path: link 1 – link 3 – link 2
 What is the total delay in transmitting the packet _____ (in ms). (Upto 2 decimal place)

 59.40 (59.40 - 59.50)

Correct Option

Solution:

59.40 (59.40 - 59.50)

Total delay,

$$\begin{aligned} &= \text{Propagation delay} + \text{Transmission Delay} + \text{Queuing delay} + \text{Processing delay} \\ &= 40 \text{ ms} + 10 \text{ ms} + 5 \text{ ms} + 500 \text{ KB} \times (1/10 \text{ Gbps} + 1/2 \text{ Gbps} + 1/2 \text{ Gbps}) = 59.40 \text{ ms} \end{aligned}$$

Note that here, 'B' is bytes (in data) and 'b' is bits (in speed).

Q. 28

[FAQ](#)
[Have any Doubt?](#)

What is the size of the 'total length' field in IPv4 datagram? (in bits)

 16

Correct Option

Solution:

16

Size of the 'total length' field in IPv4 datagram is 16.

Q. 29

[FAQ](#)
[Have any Doubt?](#)

There is a need to create a network that has 5 subnets each with atleast 12 hosts. How many of the following can be used as classfull subnet mask?
 I. 255.255.255.192 II. 255.255.255.248
 III. 255.255.255.240 IV. 255.255.255.224

 2

Correct Option

Solution:

2

255.255.255.192	$192 = 1100\ 0000$ Subnets $2^2 - 2 = 2$ <input checked="" type="checkbox"/>
255.255.255.248	$248 = 1111\ 1000$ Subnets $2^3 - 2 = 30$ Number of hosts = $2^3 - 2 = 6$ <input checked="" type="checkbox"/>
255.255.255.240	$240 = 1111\ 0000$ Subnets $2^4 - 2 = 14$ Number of hosts = $2^4 - 2 = 14$ <input checked="" type="checkbox"/>
255.255.255.224	$224 = 1110\ 0000$ Subnets $2^5 - 2 = 6$ Number of hosts = $2^5 - 2 = 30$ <input checked="" type="checkbox"/>

So, answer will be 2.

Q. 30

[FAQ](#)
[Have any Doubt?](#)

If we have to send 7 bits of data then the number of redundant bits need to be added before send the data is _____.

 4

Correct Option

Solution:

4

We need to satisfy the condition $2r \geq m + r + 1$ where r is number of redundant bits and m is number of data bits that needs to be send.

The smallest value for $r = 4$ is satisfying the condition.

Hence the answer is 4.

QUESTION ANALYTICS



Kunal Jha

Course: GATE
Computer Science Engineering(CS)

HOME

MY TEST

BOOKMARKS

MY PROFILE

REPORTS

BUY PACKAGE

NEWS

TEST SCHEDULE

COMPUTER NETWORKS (GATE - 2021) - REPORTS

OVERALL ANALYSIS

COMPARISON REPORT

SOLUTION REPORT

ALL(33)

CORRECT(0)

INCORRECT(0)

SKIPPED(33)

Q. 31

FAQ

Have any Doubt?



If subnet mask 255.255.255.224, which of the following DBA is/are possible?

A 202.15.19.127

Correct Option

B 202.15.19.63

Correct Option

C 202.15.19.31

D 202.15.19.15

YOUR ANSWER - NA

CORRECT ANSWER - a,b

STATUS - SKIPPED

Solution :

(a, b)
Given, Subnet mask = 255.255.255.224
224 = 1110 0000

- (a) 202.15.19.127
127 = 0111 1111
3rd subnet DBA
- (b) 202.15.19.63
63 = 0011 1111
1st subnet DBA
- (c) 202.15.19.31
31 = 0001 1111
0th subnet DBA
But it is used for network ID.
So this option is also not possible.
- (d) 202.15.19.15
15 = 0000 1111
0th subnet DBA
All host bits should be 1.
So this is not possible.

QUESTION ANALYTICS



Q. 32

FAQ

Have any Doubt?



Which of the following is/are true about Subnetting?

A It can be applied only for single network.

Correct Option

B It is used to improve security.

Correct Option

C Here, bits are borrowed from network ID portion

D Here, bits are borrowed from host ID portion.

Correct Option

YOUR ANSWER - NA

CORRECT ANSWER - a,b,d

STATUS - SKIPPED

Solution :

(a, b, d)
In Subnetting bits are borrowed from host ID portion.

QUESTION ANALYTICS



Q. 33

Have any Doubt?



Which of the following statement(s) is/are correct about HTTP cookies?

A Cookies is a piece of code that has the potential to compromise the security of an Internet user.

Correct Option

B Cookie gains entry to the user's work area through an HTTP header.

Correct Option

C Cookie has an expiry date and time.

Correct Option

D Cookies can be used to track the browsing pattern of a user at a particular site.

Correct Option

YOUR ANSWER - NA

CORRECT ANSWER - b,c,d

STATUS - SKIPPED

Solution :

(b, c, d)

Cookies are not piece of code, they are just strings typically in the form of key value pairs.

 QUESTION ANALYTICS

+

Item 31-33 of 33

« previous

1

2

3

4

next »