b.i.	In the stop and wait protocol, show the case in which the receiver receives a duplicate packet (which is also out of order). Hint: Think about a delayed ACK. What is the reaction of the receiver to this event?	5	3	2	3
ii.	A network using CSMA/CD has a bandwidth of 10 mbps. If the maximum propagation time is 51.2 μs, what is the minimum size for standard Ethernet frame?	5	3	2	2
28. a.i.	A block of addresses is granted to an organization like SRM and we know that one of the address is 210.10.5.6/28. Find the first address, last addresses and number of addresses in the block.	6	4	3	1
ii.	The network address of 150.10.0.0/22 provides how many subnets and hosts?	4	4	3	1
	(OR)				
b.i.	A host with IP address 150.10.0.0 and physical address OXB43555102220. Another host with IP address 150.10.0.2 and physical address OXA46FF45983AB. The two hosts are on the same Ethernet network. Show the ARP reply packet encapsulated in Ethernet frames.	8	3	3	1
ii.	Write the significance of BOOTP.	2	3	3	1
29. a.	Explain the congestion control techniques used to improve QoS of the computer network.	10	3	4	1
	(OR)				
b.	0045DF0000580000 is a contents of a UDP header in hexadecimal format. (i) What is the source port number? (ii) What is the destination port number? (iii) What is the total length of the user datagram? (iv) What is the length of the data? (v) What is the application layer protocol?	10	4	4	1
30. a.	Both HTTP and FTP can retrieve a file from a server. Which protocol we use to download a file? Explain that protocol in detail.	10	4	5	1
	(OR)				
b.	Professor Mark Allen Weiss sending congratulations email to professor Forouzan for his book publication. Here you have to explain, what are the protocols used to send Emails and also explain about the transaction request and respond commands reacted to the transaction. (Hint: Explain during transaction how the connections are established, email transferred and how connections are terminated) Email_id Mark Allen Weiss: mawise@gmail.com Forouzan: forouzan@gmail.com	10	4	5	1

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Reg. No.														

B.Tech. DEGREE EXAMINATION, MAY 2022
Sixth Semester

18CSC363J – COMPUTER NETWORKS
(For the candidates admitted from the academic year 2018-2019 to 2019-2020)

Note:
(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
(ii) **Part - B** should be answered in answer booklet.

Time: 2½ Hours Max. Marks: 75

PART – A (25 × 1 = 25 Marks)
Answer **ALL** Questions

		Marks	BL	CO	PO
1.	The variation in the packet arrival time is known as _____. (A) Delay (B) Jitter (C) Delivery (D) Timeliness	1	1	1	1
2.	_____ is the elapsed time between an inquiry and a response. (A) Transit time (B) Inter arrival time (C) Response time (D) Mean time	1	1	1	1
3.	In which layer NICS works? (A) Physical layer (B) Data link layer (C) Network layer (D) Transport layer	1	2	1	1
4.	The maximum frame length for 10 mbps Ethernet is _____ bytes. (A) 1500 (B) 1518 (C) 64 (D) 46	1	2	1	1
5.	Which multiple access technique is used by IEEE 802.11 standard for wireless LAN? (A) CSMA/CA (B) ALOHA (C) CDMA (D) CSMD	1	1	1	1
6.	What is the Hamming distance for the code word d(00000, 11111)? (A) 0 (B) 1 (C) 4 (D) 5	1	2	2	2
7.	In block coding, we divided our message into blocks, each of K bits called _____. (A) Data words (B) Code words (C) Redundant bit (D) Parity check code	1	1	2	3
8.	What is the vulnerable time for pure ALOHA protocol? (A) $2*T_{fr}$ (B) T_{fr} (C) $3*T_{fr}$ (D) $4*T_{fr}$	1	1	2	2

9. In stop-and-wait protocol, both the sender and the receives use a sliding window of size _____. 1 2 2 4
(A) 2^m (B) 2^m-1
(C) 1 (D) n

10. Assuming even parity, find the VRC for data units 0001100 1 2 2 2
(A) 0 (B) 1
(C) 00 (D) 01

11. Find the class of IP address 11110000 10101010 11111111 00000000 1 2 3 1
(A) A (B) B
(C) C (D) E

12. A packet has arrived in which the offset value is 100. What is the number of the first byte? 1 2 3 1
(A) 4 (B) 5
(C) 8 (D) 7

13. The protocol defined by internet layer in TCP / IP is _____. 1 1 3 1
(A) TCP (B) UDP
(C) SNMP (D) ARP

14. The internet control message protocol has the header size of _____. 1 2 3 1
(A) 12 bytes (B) 10 bytes
(C) 8 bytes (D) 6 bytes

15. DHCP uses UDP port _____ for sending data to the server. 1 2 3 1
(A) 66 (B) 67
(C) 68 (D) 69

16. The minimum size of a UDP datagram would be _____ bytes. 1 2 4 1
(A) 4 (B) 8
(C) 20 (D) 28

17. A port address in UDP is _____ bits long. 1 1 4 1
(A) 8 (B) 16
(C) 32 (D) 4

18. In TCP, the sequence numbering starts with a _____. 1 2 4 1
(A) 1 (B) Randomly assigned node
(C) Randomly generated number (D) 0

19. TCP groups a number of bytes together into a packer called _____. 1 1 4 1
(A) Packet (B) Frame
(C) Buffer (D) Segment

20. DNS can use the service of either TCP or UDP using the well known port _____. 1 2 4 1
(A) 53 (B) 20
(C) 21 (D) 52

21. FTP server listens to connection on port _____. 1 1 5 1
(A) 19 and 20 (B) 21 and 22
(C) 20 and 21 (D) 20 and 22

22. The characters are sent to the TELNET client, which transforms the characters into universal character set called _____ and delivers them to the local TCP/IP stack. 1 1 5 1
(A) Network address translation (B) Network virtual terminal
(C) Network address translator (D) Network remote terminal

23. Fully qualified domain name is terminated by _____ string. 1 2 5 1
(A) Null (B) 1
(C) 2 (D) 3

24. SNMP uses the services of UDP on two well-known ports ____ and _____. 1 1 5 1
(A) 141 and 142 (B) 151 and 152
(C) 161 and 162 (D) 171 and 172

25. In non persistent connection, if a file contains links to N different pictures in different files (all located on same server) the connection must be opened and closed _____ times. 1 2 5 1
(A) 1 (B) N
(C) N+1 (D) 0

PART – B (5 × 10 = 50 Marks) Marks BL CO PO
Answer **ALL** Questions

26. a.i. For 6 devices in a network, what is the number of cable links and I/O ports required for a mesh, ring and bus topology. 6 3 1 1

ii. In 802.11 network, there are three stations A, B and C. Station C is hidden from A, but can be seen by B. Now assume that station A needs to send data to station B. Since C is hidden from A, RTS frame cannot reach C. Explain how station C can find out that the channel is locked by A and that it should refrain from transmitting. 4 4 1 1

(OR)

b.i. Assume that a private internet requires that the messages at the application layer be encrypted and decrypted for security purpose. If we need to add some information about the encryption/ decryption process, does it mean that we are adding one layer to the TCP/IP protocol suite? Redraw the TCP/IP layers if you think so. 6 4 1 1

ii. A light signal is travelling through a fiber. What is the delay in the signal if the lengths of the fiber-optic cable are (1) 5 m and (2) 500 m. (Assume a propagation speed is $2\times10^8 m$)? 4 3 1 1

27. a. The message 10100111 is to be transmitted using CRC error detection algorithm. Assuming the CRC polynomial to be x^4+x^2+x+1, determine the message that should be transmitted. If the second left most bit is corrupted show that it is detected by the receiver. 10 4 2 2

(OR)