ii. Compare and contrast byte stuffing and bit stuffing. (4 Marks)

(OR)

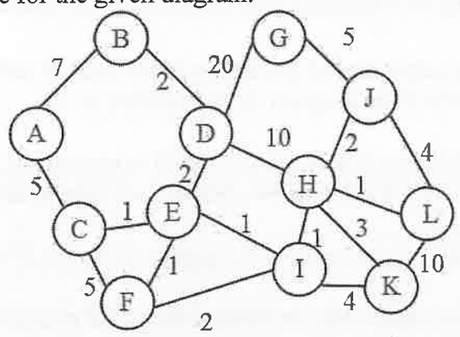
b.i. Explain the responsibility of network support layers in OSI model.

ii. With a neat flow diagram, explain the CSMA/CA protocol.

30. a. In IPv4 datagram has arrived with the following information in the header (in hexadecimal):
OX 45 00 00 54 00 03 58 50 20 06 00 00 7C 4E 03 02 B4 OE OF 02
(i) Is the packet fragmented?
(ii) Are there any options? What is the size of the data?
(iii) How many more routers can the packet travel to?
(iv) What is the identification number of the packet, its type of service, and its source address, destination address?

(OR)

b. Apply Dijisktra's algorithm to find the shortest path from the view point of node A and draw the respective routing tree for the given diagram.



31. a.i. With a neat sketch explain the TCP segment format. (8 Marks)

ii. Draw the UDP datagram and enumerate its field. (4 Marks)

(OR)

b. What is meant by congestion? Discuss the various congestion control mechanism.

32. a. Write a note on
(i) Communication over control and data connection in FTP (8 Marks)
(ii) Request messages in HTTP (4 Marks)

(OR)

b.i. Explain DES (Data Encryption Standard) algorithm and show how a 64-bit plain text is converted to a 64-bit cipher text. (8 Marks)

ii. Write a note on lossless compression techniques. (4 Marks)

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Reg. No.															

B.Tech. DEGREE EXAMINATION, JUNE 2019
1st to 7th Semester

15EC405J – COMPUTER COMMUNCIATION

(For the candidates admitted during the academic year 2015 – 2016 to 2017 – 2018)

Note:
(i) **Part - A** should be answered in OMR sheet within first 45 minutes and OMR sheet should be handed over to hall invigilator at the end of 45th minute.
(ii) **Part - B** and **Part - C** should be answered in answer booklet.

Time: Three Hours Max. Marks: 100

PART – A (20 × 1 = 20 Marks)
Answer **ALL** Questions

1. In _____ transfer mode, the capacity of the channel must be divided between the two directions.
(A) Simplex (B) Half duplex
(C) Full duplex (D) Half duplex

2. How many links are required to connect a mesh topology, if there exists a 10 statins and need to have duplex link communication?
(A) 45 (B) 90
(C) 100 (D) 50

3. The data portion of a packet at level N-1 carries the whole packet from level N. this concept is called as
(A) Multiplexing (B) Formatting
(C) Decapsulation (D) Encapsulation

4. In _____ network, store and forward mechanism is used.
(A) Circuit switched (B) Message switched
(C) Datagram (D) Virtual circuit switched

5. The hop to hop delivery is the responsibility of _____layer.
(A) Data link (B) Network
(C) Presentation (D) Application

6. Identify the protocols which supports IP in network layer
(A) ICMP and IGMP (B) TCP and SCTP
(C) TCP and UDP (D) UDP and SCTP

7. The size of the sender and receiver window in Go back N ARQ are
(A) $2^{m-1}, 2^m$ (B) $2^{m-1}, 2^m - 1$
(C) $2^m - 1, 1$ (D) $1, 2^m - 1$

8. In HDLC protocol, the code subfield in the control field of S-frame is 10, identify the type of S-frame.
   (A) Receiver ready (RR) (B) Receiver not ready (RNR)
   (C) Reject (REJ) (D) Selective reject (SREJ)

9. For the given IPV4 address
   11000001100000110001101l 11111111, the equivalent dotted decimal notation is
   (A) 193.131.27.255 (B) 193.132.27.255
   (C) 193.131.28.254 (D) 193.131.27.250

10. An address space has a total of 1024 addresses. How many bits are needed to represent an address?
    (A) 5 (B) 10
    (C) 15 (D) 20

11. In DVR, a node sends its routing table normally every _____ seconds in a periodic update.
    (A) 25 (B) 45
    (C) 30 (D) 60

12. An IPV6 address is a_____ bit long address.
    (A) 32 (B) 48
    (C) 64 (D) 128

13. The combination of an IP address and a port number is known as _____ address.
    (A) Physical (B) Network
    (C) Socket (D) MAC

14. The UDP length can be calculated by
    (A) IP length +IP header length (B) IP header length – IP length
    (C) IP length +UDP length (D) IP length – IP headers length

15. If the destination port number of an UDP is 16 bit long then the port number can range
    (A) 0 to 65,535 (B) 1 to 65,536
    (C) 0 to 65,536 (D) 1 to 65,535

16. Suppose a TCP connection is transferring a file of 5000 bytes. The first byte is numbered as 10,001. What is the sequence number for the first segment is data are sent in five segments, each carrying 1000 bytes?
    (A) 10,001 to 10,999 (B) 10,001 to 11,000
    (C) 10,001 to 11,001 (D) 10,001 to 10,998

17. HTTP functions as a combination of _____ and _____ protocols.
    (A) TCP and UDP (B) TCP and IP
    (C) FTP and SMTP (D) FTP and TCP

18. The well known port _____ is used for the control connection in FTP.
    (A) 18 (B) 19
    (C) 20 (D) 21

19. When the sender is connected to the mail server via a LAN or a WAN, we need _____UA's and_____pairs of MTA's.
    (A) 2, 2 (B) 3, 2
    (C) 2, 3 (D) 3, 3

20. _____ is the standard mechanism provided by TCP/IP for copying a file from one host of another.
    (A) E-MAIL (B) FTP
    (C) HTTP (D) MIME

PART – B (5 × 4 = 20 Marks)
Answer **ANY FIVE** Questions

21. Consider that there are 5 devices which are arranged in a MESH, STAR, BUS and RING topologies respectively. Discuss the consequences if a connection fails in each topology.

22. Compare datagram switching and virtual circuit switching networks.

23. Why do the window size of the sender in Go back N ARQ is choosen lesser than 2^m? Justify your answer with flow diagram by considering m =2.

24. A block of addresses is granted to a small organization. We known that one of the addresses is 205.16.37.39/28. Find the first address, last address and the number of addresses.

25. List out the differences between the packet header in IPv4 and IPv6.

26. Write a note on connection termination in a TCP connection.

27. Encrypt the message "THIS IS AN EXERCISE" using a shift/Caesar cipher with a key of 20. Ignore the space between the words.

PART – C (5 × 12 = 60 Marks)
Answer **ALL** Questions

28. a.i. Enumerate the different phases to make a connection between two end systems in a circuit switched networks. (8 Marks)

    ii. List out the advantages and disadvantages of MESH and STAR topologies. (4 Marks)

(OR)

    b. Discuss the various frames of IEEE 802.5 and explain the working mechanism of it.

29. a.i. Draw the flow diagram for the following scenario in stop and wait ARQ. Frame '0' is sent and acknowledged. Frame 1 is lost and resent after the time out. The resent frame '1' is acknowledged and the timer stops. Frame '0' is sent and acknowledged, but the acknowledgment is lost. The sender has no idea if the frame or the acknowledgement is lost, so after the time out, it resend frame '0', which is acknowledged. (8 Marks)