30. a. Explain the distance vector routing algorithm with an example.

(OR)

b.i. Explain the RIP protocol message types and its timers.

ii. Write the three node instability problem in distance vector routing.

31. a.i. Consider the message 111010 is represented by the polynomial $M(x) = x^5 + x^4 + x^3 + x$ and the generator polynomial $G(x) = x^3 + x^2 + 1$. Calculate the CRC.

ii. Calculate the redundancy bits for the following data frame
Data: 10011010

(OR)

b. Discuss CSMA/CD with a neat diagram.

32. a. Discuss about the guided and unguided transmission media in detail.

(OR)

b. Draw the frame format of 802.11 and explain in detail.

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Reg. No.														

B.Tech. DEGREE EXAMINATION, MAY 2019
3rd to 8th Semester

15IT303J – COMPUTER NETWORKS
(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. Two devices are in network if
   (A) A process in one device is able to exchange information with a process in another device
   (B) A process is running on both devices
   (C) PID of the process running of different devices are same
   (D) A process is running in same system
2. The layer responsible for process to process delivery.
   (A) Network layer
   (B) Transport layer
   (C) Session layer
   (D) Data link layer
3. In a layer hierarchy as the data packets moves from the upper to the lower layers, headers are
   (A) Added
   (B) Removed
   (C) Rearranged
   (D) Modified
4. Transmission data rate is decided by
   (A) Network layer
   (B) Physical layer
   (C) Data link layer
   (D) Transport layer
5. How long is an IPv6 address?
   (A) 32 bits
   (B) 128 bits
   (C) 128 bytes
   (D) 64 bits
6. Which of the following is private IP address?
   (A) 192.168.24.43
   (B) 168.172.19.39
   (C) 12.15.14.36
   (D) 12.0.0.1
7. Which of the following devices direct network traffic based not by MAC addresses but by software configured network addresses?
   (A) Route
   (B) Hub
   (C) Bridge
   (D) NIC
8. The network devices/ systems translates data from one format to another is
   (A) HUB
   (B) DHCP server
   (C) Gateway
   (D) NIC

9. Routing tables of a route keeps track of
   (A) MAC address assignments (B) Port assignments to network devices
   (C) Distribute IP address to network devices (D) Routes to use for forwarding data to its destination

10. Controlling access to a network by analyzing the incoming and outgoing packets is called
   (A) IP filtering (B) Data filtering
   (C) Packet filtering (D) Firewall filtering

11. What do you mean by broadcasting in networking?
   (A) It means addressing a packet to all machine (B) It means addressing a packet to some machine
   (C) It means addressing a packet to a particular machine (D) It means addressing a packet to except a particular machine

12. Which class of IP address provides a maximum of only 254 host addresses per network ID?
   (A) Class A (B) Class B
   (C) Class C (D) Class D

13. The primary function of the trailer information added by the data link layer encapsulation is
   (A) Supports error detection (B) Ensures ordered arrival of data
   (C) Identifies the devices on the local network (D) Provides delivery to correct destination

14. Error detection at the data link layer is achieved by
   (A) Bit stuffing (B) Cyclic redundancy codes
   (C) Hamming codes (D) Equalization

15. _____ describe how the Ethernet protocol regulates communication among connection points.
   (A) Carrier sense multiple access/ collision detect (B) Discontinuous transmission
   (C) Aggregator (D) Wait and response

16. The Start Frame Delimeter (SFD) in Ethernet frame is
   (A) 10101010 (B) 10101011
   (C) 00000000 (D) 11111111

17. Before data can be transmitted, they must be transformed to _____.
   (A) Periodic signals (B) Electromagnetic signals
   (C) Aperiodic signals (D) Low-frequency sine waves

18. The physical layer is concerned with the movements of _____ over the physical medium.
   (A) Programs (B) Dialogs
   (C) Protocols (D) Bits

19. The physical layer translates logical communication requests from the _____ into hardware specific operations.
   (A) Network layer (B) Transport layer
   (C) Data link layer (D) Application layer

20. Bluetooth is a _____ technology that connected devices in a small area.
   (A) VLAN (B) Wireless LAN
   (C) Wired LAN (D) Wired WAN

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

21. Compare OSI and TCP/IP model.

22. From the given address 192.168.10.0/24, create 16 subnets. Find the usable IP address in each subnet.

23. List the types of OSPF packets.

24. Differentiate IPv4 public and private address with a neat diagram.

25. Write the range of classfull addressing and its default subnet mask.

26. Calculate the checksum for the following data frame
   Data frame: 1101 1101 1111 0011 1110 1110

27. What is transmission times of a packet sent by a station if length of packet is 1 million bytes and bandwidth of channel is 200 kbps?

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

28. a. List the layers of OSI model with a neat diagram and explain the responsibilities of each layer.

(OR)

b. Define topologies. List the types of topologies with its advantages and disadvantages.

29. a. An organization is granted the block 212.178.180.0/27. Find
   (i) Number of subnets (2 Marks)
   (ii) Number of hosts (2 Marks)
   (iii) What are the valid subnets? (3 Marks)
   (iv) What is the broadcast address for each subnet? (3 Marks)
   (v) What are the valid hosts? (2 Marks)

(OR)

b. An organization is granted a block of addresses with the beginning address 12.10.74.0/24. The organization needs to have 11 subnets as shown below
   (i) Two subnets with 64 addresses each
   (ii) Two subnets each with 32 addresses
   (iii) Three subnets each with 16 addresses
   (iv) Four subnets with 4 addresses
   Compute the subnets mask, first address and last address of each subnet.