VTU QUESTION BANK

UNIT-1

1. a. What is data communication? What are its characteristics? Explain.

[Jan 15/Jun 16]

  b. Define following terms (I) protocol (II) Internet. **[Jan 16]**
  c. Describe with neat diagram the functions of each layer in the OSI model

[Jan 15]

2. a. With neat diagram explain mesh topology and star topology with application of each.

[Jan 15]

  b. What are standards? Name any four standard organizations. **[Jun 14]**

  c. Define i) Physical layer ii) Data link layer iii)Network layer. **[Jun 15/Jun 16]**

3. a. What is a protocol? What are its key elements? **[Jun 14]**

  b. Differentiate between: **[Jan 15]**

     i) ARP and RARP: Address Resolution Protocol

     ii) ICMP and IGMP:

     iii) UDP and TCP: User Datagram Protocol

4. a. Give the comparison between LAN, MAN & WAN with an example? **[Jun 15]**

  b. Describe with neat diagram the functions of each layer in the TCP/IP model **[Jan 16]**

5.a. What are the components of data communication system? Explain in Breif. **[Jan 15]**

  b. What is the difference between physical and logical address? Explain with an example.

[Jun 15]

6.a. Define network. With a neat diagram explain four basic topologies. [Jan 16]

UNIT-2

1. a. Calculate the Shannon channel capacity in the following cases: **[Jun 14]**

     (i) Bandwidth =20KhzSNRdb=40 (ii) Bandwidth =200 kHz SNRdb=6

  b. A file contains 3 million bytes. How long does it take to download this file using 100kbps. **[Jan 16]**

  c. Define line coding. Describe Unipolar NRZ, polar NRZ-L, Bipolar AMI and

Manchester encoding with the information sequence 101011100   **[Jun 14/Jan 15/Jan 16]**

2. a. Explain three causes for transmission impairments.   **[Jan 16]**

b. Describe with neat wave form any two polar coding schemes   **[Jun 14]**

c. Give data rate formula suggested by Nyquist and Shannon Low-pass communication has BW of 1MHZ. What is Shannon capacity of channel if SNR is 40db? What bit rate is attainable using 8-level pulses?   **[Jun 14]**

3. a. Explain briefly, with neat figures, the two approaches for digital transmission.

[Jun 14/Jan 15/Jun 16]

b. Discuss 8B/10B coding style   **[Jun 15]**

c. Explain the delta modulation.   **[Jun 15]]**

4. Explain the following: **[Jan 16/Jun 16]**

a. Bandwidth   b. Throughput   c. Error rate   d. Latency   e. Jitter

5. a. Compare and contrast PCM and DM [Jan 15/Jan 16]

UNIT-3

1. a. Define synchronous TDM   **[Jan 16/Jun 16]**

b. Describe ASK, FSK and PSK mechanisms and apply them over the digital data 101101   **[Jan 15]**

2. a. With neat waveform, explain three methods of digital to analog conversion. Draw waveform with input data 110100.   **[Jan 15]**

b. What is multiplexing? With neat diagram explain FDM.   **[Jun 14]**

c. What is TDM? Four sources create 250 characters per second. The frame contains one character from each source and one extra bit for synchronization. Find

i)The data rate of each source   ii) Duration of each character in each source

iii) The frame rate   iv) Duration of output frame

v) Frame size in bits   vi) Data rate of link.   **[Jan 15/Jan 16]**

3. a. What is FDM? Briefly explain its multiplexing and demultiplexing process.   [Jun 14]

b. Explain briefly the two spread spectrum techniques   **[Jun 14]**

4. a. Define synchronous TDM **[Jun 15]**

  b. Explain Amplitude modulation **[Jan 16/Jan 15]**

  c. Define PSK **[Jun 15]**

5.a. With relevant diagrams explain the data transfer phase in a virtual circuit network.[Jun 15/Jan 16/Jun 16]

UNIT-4

1. a. Briefly explain coaxial cable and optical fiber with their applications. **[Jan 15]**

  b. What is hamming distance? Explain. **[Jun 15/Jun 16]**

  c. What is CRC? If the generating polynomial for CRC code is X+X+1 and message word is 11110000, determine check bits and coded word. **[Jan 16/Jan 15]**

2. a. Find the codeword C(x) for the information D(x) = x3 +1 with a generator polynomial T (x) = X3 +x +1 **[Jan 16/Jun 16]**

  b. What is internet checksum? With an example list the steps undertaken by the sender & the receiver for error detection. **[Jan 15]**

3. a. Explain error detecting and error correcting in block coding. **[Jun 15/Jan 16]**

  b. Define Types of Errors in data communication. **[Jun 15]**

4. Explain the structure of encoder and decoder of hamming code. **[Jan 15]**

5. How does datawords and codewords is represented in block coding .[Jan 16]

UNIT-5

1. Explain selective repeat ARQ. Justify how selective repeat ARQ outperforms Go back N and stop and wait ARQ **[Jun 15/Jan 16/Jan 15]**

2. a. Differentiate between character oriented and bit oriented format for framing. [Jun 14/Jun 16]

  b. Explain salient features of i) Stop-and-wait protocol ii) Stop-and-wait ARQ protocol. **[Jun 14/Jun 15]**

  c. Explain briefly about Piggy backing error in PPP **[Jan 15]**

3. a. Design the algorithm for Stop and Wait ARQ and Go Back N protocol. **[Jan 16]**

b. **Explain the frame format and traditional phases of point-to-point protocol.   [Jun 14]**

4. **Explain the different frame types in HDLC.[Jan 15/Jan 16/Jun 16]**

UNIT-6

1. a. **Explain the following random protocol (i) CSMA (ii) CSMA/CD   [Jun 14/Jan 15/Jun 16]**

   b. **Discuss 802.3 MAC frame format. Mention the restriction imposed on minimum and maximum lengths of a 802.3   [Jan 15/Jun 15]**

2. a. **What is Random Access? Explain following Random access protocols**

   i) Slotted ALOHA   ii) CSMA/CD   [Jun 14/Jan 16]

   b. **What is channelization? Explain CDMA   [Jun 15/Jan 16/Jun 16]**

   c. **Describe frame format for IEEE 802.3 MAC frame. What are salient features of fast Ethernet?   [Jan 15]**

3. a. **A network transmits 200 bit frame on a shared channel of 200 kbps. For aloha and slotted aloha, what is the requirement to make the frame collision free ? [Jun 15]**

   b. **Define channelization and list its three protocols.   [Jun 15]**

UNIT-7

1. a. **Discuss Bluetooth technology.   [Jun 14]**

   b. **Explain the working mechanism of following devices used to connect LANs**

       (i) Bridge   (ii) Router   [Jan 15]

2. a. **Describe the MAC layers in IEEE 802.11 standard   [Jun 15/Jan16/Jun 16]**

   b. **In brief explain Bluetooth layers.   [Jan 15/Jan 16]**

   c. **Bring out differences between Repeaters, Bridges, Routers and Gateways.   [Jun 14]**

3. **Explain the hidden and exposed station problems in IEEE 802.11.   [Jun 15/Jan 15]**

4. a. **Explain IEEE 802.11 Architecture.   [Jun 14/Jun 16]**

   b. **Explain how a virtual LAN helpful in providing security does and reduce the network traffic.   [Jan 15]**

   c. **Explain the bridges.   [Jun 15]**

5. Explain the Global System for mobile (GSM) in detail.   **[Jan 15]**

6 a. Explain the different types of addressing mechanism in IEEE 802.11 [Jan 16]

UNIT-8

1. a. What are the design goals of ATM? Briefly describe ATM layers.   **[Jun 15]**

   b. Explain the Cellular Telephone system.   **[Jun 14]**

2. a. Write short notes on Network Address Translation.   **[Jun 14]**

   b. Explain briefly the advantages of IPV6.   **[Jan 15]**

3. a. Draw IPV4 header format and explain.   **[Jun 15/Jun 16]**

   b. compare between IPV4 and IPV6.   **[Jun 14]**

   c. A ISP is granted a block of addresses starting with 190.100.0.0/16(65,536 addresses).The ISP needs to distribute these addresses to three groups of customers as follows:

        a. The first group has 64 customers;each needs 256 addresses.

        b. The second group has 128 customers;each needs 128 addresses

        c. The third group has 128 customers;each needs 64 addresses.   **[Jan 16]**

 4. a. Explain with respect to IPV4 classful addressing and classless addressing.   [Jan 15/Jun 16]

   b. Explain in detail IPV6 packet format.   **[Jan 15/Jun 15]**

5.Write note shorts on   [10m] [Jan 15/Jun 16]

 i) FHSS

 ii) Polling