END TERM EXAMINATION

SIXTH SEMESTER [B.TECH.] JULY 2023

| Paper Code: ETEC-310 | Subject: Data communication and Networks |

(IT/ECE/MAE/ITE)

Time: 3 Hours   **Maximum Marks: 75**

Note: Attempt any five questions including Q.No1 which is compulsory. Select one question from each unit.

Q1   Attempt **any Five**   **[5x5=25]**
- (a) Explain the correlation between the OSI model and TCP/IP model with a proper diagrammatical form.
- (b) What do you understand by Circuit Switching and Packet Switching? Discuss through the diagram.
- (c) Describe the LAN-based FDDI over a basic token ring in detail.
- (d) Differentiate SMTP & POP protocol.
- (e) Explain the IPv4 protocol with header format. Also, compare with IPv6.
- (f) Explain the High-Level Data Link Control (HDLC) protocol used in computer networks. Discuss its key features, frame structure, and modes of operation.

UNIT-I

Q2   a)   What is the OSI reference model? Draw a block diagram and explain the functioning of each layer.   **[7.5]**
     b)   i.   Define the transmission modes with a diagram.   **[2.5]**
          ii.   Describe the transmission impairment.   **[2.5]**

Q3   Explain the following terms with proper examples: **(2.5x5=12.5)**
- a) Virtual Circuit with diagram
- b) Guided and Unguided Media
- c) Wavelength
- d) Differentiate Process to Process and Host to Host delivery
- e) Baseband transmission and Broadband transmission

UNIT-II

Q4   a)   Explain the working of the Go-Back-N ARQ protocol and the Selective Repeat ARQ protocol. Also, compare the Sender and Receiver Window Sizes of both ARQ.   **[6.5]**
     b)   Short note on: **[6]**
          i)   Leaky bucket algorithm
          ii)   Channelization in Medium Access Control

Q5   a)   Define the meaning of carrier sense in CSMA. Also, Explain the CSMA/CD and CSMA/CA with the diagram.   **[6.5]**
     b)   Explain the following: **[6]**
          i.   Control Protocols in Medium Access Control
          ii.   Pure ALOHA and Slotted ALOHA

P.T.O.

UNIT-III

Q6 a) Explain the classful IP addressing in detail   (6.5)
    b) Describe and Differentiate between: [6]
        i)   ARP and RARP
        ii) ICMP and IGMP

Q7 a) Give a detailed description of standard IEEE 802.11.   [6.5]

    b) A datagram of 3000 bytes (20 bytes of IP header + 2980 bytes IP payload)
        reached the router and must be forwarded to link with MTU (maximum
        transmission unit) of 500 bytes. How many fragments will be granted also
        write MF, offset, and total length value for all?   [6]

UNIT-IV

Q8 Explain the following: -   [6.5, 6]
    a) What is FTP? How files are transferred using FTP?
    b) Difference between UDP and TCP.

Q9 Attempt **any Two**   [6.25x2]
    a. Explain the DNS.
    b. Explain TCP Header in detail.
    c. Describe the terms HTTP and WWW

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