Time : 3 hrs   **MM : 70**

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1.   Attempt *all* questions in brief.   2 x 7 = 14

    a.   Define Radio wave
    b.   Define Protocol. Give the need for Protocol *Layering*
    c.   Explain Nyquist Bit Rate .

    d.   Write about CSMA/CD protocol

    e.   Explain *burst error* .
    f.   Write about Socket?

    g.   *Differentiate between* Symmetric Key Encryption and Asymmetric Key Encryption

SECTION B

2.   Attempt any *three* of the following: 7 x 3 = 21

    a.   What is switching? Briefly explain different Methods of Switching
    b.   Define Data Communication .Describe Fundamental characteristics of Data Communication
    c.   Briefly explain about IP Addressing. *Differentiate between classful addressing and classless addressing*
    d.   What is congestion? Define congestion control with a suitable Example.
    e.   Briefly Explain Electronic mail system.
      Differentiate between POP3 and IMAP protocol

SECTION C

3.   Attempt any *one* part of the following: 7 x 1 = 7

    (a)   What is Network topology .Explain different types of topologies
    (b)   Explain Transmission media .Differentiate guided media from unguided media .

4.   Attempt any *one* part of the following: 7 x 1 = 7

    (a)   Describe hamming code. How it is used for error detection and correction? Illustrate with the help of a suitable example.
    (b)   A classless address is given as 167.199.170.82/27. Find the
        I.   The number of addresses in the network
       II.   First address
      III.   Last address

5.   Attempt any *one* part of the following: 7 x 1 = 7

    (a)   Explain any two connecting devices: hubs, link-layer switches, and routers
    (b)   What are the performance measure criteria of a Network? Explain.

6. **Attempt any *one* part of the following:**   **7 x 1 = 7**

   (a)   *Explain any two* protocol
         a. UDP b. TCP c. SCTP
   (b)   Define Connectionless and Connection-Oriented Protocols

7. **Attempt any *one* part of the following:**   **7 x 1 = 7**

   (a)   Define Cryptography .List four Cryptography Primitives
   (b)   Define Application-Layer Paradigms