ENDSEMESTER EXAMINATION

COURSE NAME: B.Tech
BRANCH NAME: IT

SUBJECT NAME: Data Communication and Computer Networks

SEMESTER: 4th

TIME: 2.30 Hours

FULL MARKS: 50

Answer **All** Questions.

The figures in the right hand margin indicate Marks. *Symbols carry usual meaning.*
Any supplementary materials to be provided

Q1.   Answer all Questions.   [2×5]
  a)   A signal has Eight data levels with pulse duration of 2ms. What are its Pulse rate and Bit rate?
  b)   What is the purpose of twisting in a twisted pair cable?
  c)   What is the purpose of Jam signal in CSMA/CD?
  d)   Assuming classful addressing, find the network address of a host having IP address 125.23.57.67. What is the broadcast address of this network?
  e)   www.google.com. is an address or name? Justify your answer from client as well as server point of view.

Q2.
  a)   Given a binary data stream of 01101001. Encode this stream using the i) Manchester   [4]
       encoding and ii) Differential Manchester encoding.
  b)   What do you mean by sampling? What is its use? Explain in brief various sampling   [4]
       techniques.

                                         OR

  a)   Calculate the maximum number of 10 bit packets that can be transmitted over a medium   [4]
       with a bandwidth of 20 Khz with transmission time of 20 ms.
  b)   What do you mean by line coding? Explain in brief various line encoding schemes.   [4]

Q3.
  a)   A sender sends a text of 6 characters ("VSSUTB") using 16 bit words and the receiver   [4]
       receives the same word as ('VSSUTO"). Calculate the checksum in the sender side and also
       show that there is an error during the transmission.
  b)   Differentiate between circuit and packet switching mechanisms.   [4]

                                         OR

  a)   Consider a single bit error correcting Hamming code with C(7, 4) with $d_{min}=3$. Show the   [4]
       calculation of redundant bits in the sender side and syndrome bits in the receiver side. Also,
       design the correction logic analyzer table by taking a suitable example.
  b)   Differentiate between guided and unguided transmission media.   [4]

Q4.
  a)   Explain the various operation mechanism of Go-Back-N ARQ. What are its advantages   [4]
       over Stop-and-Wait ARQ?
  b)   Explain CSMA/CA procedure with a suitable flow diagram. How does it differ from   [4]
       CSMA/CD?

                                         OR

  a)   A network using CSMA/CD has a bandwidth of 5 Mbps. If the maximum propagation time   [4]
       (including the delays in devices and ignoring the time needed to send a jamming signal) is
       25.8 ms, what is the minimum size of the frame?
  b)   What are the different types of Ethernet available? Briefly describe about them.   [4]

Q5.
    a) You are the network administrator of your college. An ISP has assigned you an ip address [4]
of 192.168.128.0/23. You need to distribute the ip addresses to three departments of your
college as follows: i) CSE with 254 ip addresses
                  ii) EE with 126 ip addresses
                  iii) ME with 126 ip address
        Show the ip address distribution to each department with CIDR notation. [4]
    b) Differentiate between Distance Vector Routing and Link State routing.

<center>OR</center>

                        [4]

    a) Describe the packet format of IPv4 with neat and clean diagram. [4]
    b) What is NAT? Explain its use in the networking.

Q6
                        [4]
    a) Differentiate between TCP and UDP. [4]
    b) Describe about the FTP protocol.

<center>OR</center>

                        [4]
    a) How congestion is controlled in TCP? [4]
    b) Write short note on DNS.