6th Semester Regular / Back Examination 2018-19
COMPUTER NETWORK AND DATA COMMUNICATION
BRANCH : CSE
Max Marks : 100
Time: 3 Hours
Q.CODE : F988
Answer Question No.1 (Part-1) which is compulsory, any EIGHT from Part-II and any TWO from Part-III.
**The figures in the right hand margin indicate marks.**

Part- I

Q1 **Only Short Answer Type Questions (Answer All-10)**   **(2 x 10)**

a) Why two separate frequencies are used for uplink and downlink transmission in case of satellite communication?

b) How does Manchester encoding differ from differential Manchester encoding?

c) A carrier of 1 MHz with peak value of 10V is modulated by a 5 KHz sine wave amplitude 6V. Determine the modulation index and frequency spectrum.

d) Compare the bandwidth requirement of the three analog-to-analog modulation techniques?

e) How throughput is improved in slotted ALOHA over pure ALOHA?

f) Consider the use of 10 K-bit size frames on a 10 Mbps satellite channel with 270 ms delay. What is the link utilization for stop-and-wait ARQ technique assuming $P = 10^{-3}$?

g) Name the HDLC Non-Operational Modes.

h) Rewrite the following IP addresses using dotted-decimal notations
   i)   01011110 10110000 01110101 00010101
   ii) 10001001 10001110 11010000 00110001

i) Why fragmentation is recommended in a wireless LAN?

j) Name the three transmission modes used in FTP.

Part- II

Q2 **Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)**   **(6 x 8)**

a) How does signal propagation take place through Fiber optics? State the advantages of optical fiber over twisted-pair and coaxial cable.

b) Let, we have four sources, each creating 250 characters/sec. if the interleaved unit is one character and one synchronous bit is added to each frame, then find:
   i)   the data rate of each source
   ii)   the frame rate
   iii) the duration of each frame
   iv)   the data rate of the link

c) List four major components of a packet switch and explain their functions.

d) Consider a selective repeat sliding window protocol that uses frame size of KB to send data on 1.5 Mbps link with latency of 50msec. for 60% utilization of link, what is the minimum number of bit required to represent sequence number?

e) Why are media access control techniques required? List three popular media access control techniques.

f) Explain the use of CRC. If the generating polynomial for CRC code $x^4 + x^3 + 1$ and the message word is 11110000, determine check bits and coded word.

g) Find the spanning tree and the logical connection between the switches in the following figure.
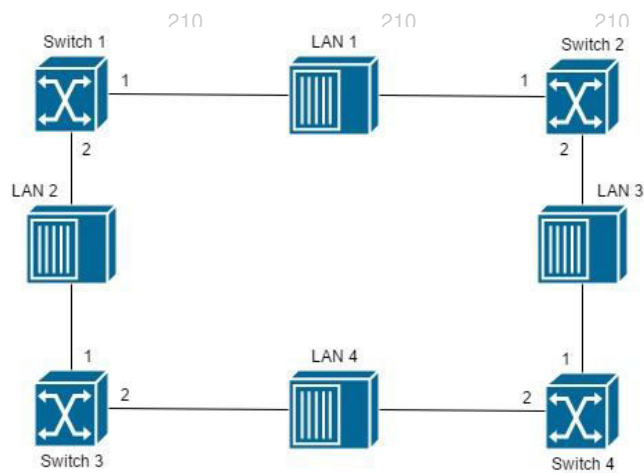
h) Differentiate IPV4 and IPV6.
i) Explain approaches to controlling congestion in the transport layer.
j) How connection is established and managed in TCP? Describe with a relevantdiagram.
k) Why HTTP is called stateless protocol? Name various HTTP connections and explain the steps involved in it with neat diagram.
l) What do you mean by Domain Name System? How does caching enhance theefficiency of name resolution in this system? Elaborate.

Part-III
Only Long Answer Type Questions (Answer Any Two out of Four)

Q3 Why analog-to-analog modulation technique is required? Describe all the possible analog-to-analog modulation techniques? **(16)**

Q4 Differentiate flow control and error control. Describe the various error control techniques. **(16)**

Q5 Compare the TCP header and the UDP header. List the fields in the TCP header that are not part of the UDP header. Give reason for each missing field. **(16)**

Q6 Explain various stages in the delivery of an email message from the sender to thereceiver? Illustrate with a block diagram. **(16)**