# AUTUMN END SEMESTER EXAMINATION-2018

## 5th Semester B.Tech & B.Tech Dual Degree

## COMPUTER NETWORKS

## IT3001

**[For 2017(L.E.), 2016 & Previous Admitted Batches]**

Time: 3 Hours | Full Marks: 60

***Answer any SIX questions including question No.1 which is compulsory.***
*The figures in the margin indicate full marks.*
*Candidates are required to give their answers in their own words as far as practicable and all parts of a question should be answered at one place only.*

1. Answer all the questions. [2×10]

(a) What is the difference between broadcast and multicast network?

(b) Write the two disadvantages of Wireless LAN.

(c) Explain the need of four segments for connection termination in TCP.

(d) Write two important functions of bridge.

(e) Distinguish between 1-persistent and P-persistent strategies.

(f) What is the purpose of jam signal in CSMA/CD?

(g) Write the advantages of TCP/IP over UDP/IP.

(h) How many networks are allowed under class C in the IPV4 addressing format?

(i) Can we have a data transfer connection without a control connection in FTP? Explain.

(j) Address Resolution protocol and explain at what point of time during data transmission we need this protocol.

2. (a) Consider the following message M= 1010001101. What is the Cyclic Redundancy Check (CRC) for the message using divisor polynomial $X^5+X^4+X^2+1$? [4]

(b) What is piggybacking? Explain selective repeat ARQ mechanism with suitable example. [4]

3. (a) A 3000 km long trunk operates at 1.536 Mbps is used to transmit 64 byte frame and uses Sliding Window Protocol. If the propagation speed is 6microsec/km, how many bit should the sequence number be? [4]

(b) Distinguish between packet switched network and circuit switched network. [4]

4. (a) Illustrate recursive and iterative queries in DNS. Each DNS reply message carries one or more resource records, explain them briefly. [4]

(b) A 2 KM long broadcast LAN has 107 bps bandwidth and uses the CSMA/CD. The signal travels along the wires at $2x\ 10^8$ m/s. What is the minimum packet size that can be used in this network? [4]

5. (a) What is an email? Name two mail access protocol. Explain the various stages of mail delivery from sender to receiver. [4]

(b) The address of class B host is to be split into subnet with 6 bit subnet number. What is the maximum number of subnet and maximum number of hosts in each subnet? [4]

6. (a) What is congestion? Explain the congestion control mechanism used by TCP. [4]



(b) Let the size of congestion window of a TCP connection be 32 KB when timeout occurs. The round trip time of the connection is 100msec and maximum segment size used is 2KB. What is the time taken (in msec) by the TCP connection to get back to 32KB congestion window? [4]

7. (a) Discuss the significance of each field in the header of IPV4 in detail. [4]

(b) Consider sending a 3000 byte datagram into a link that has an MTU of 500 bytes. Suppose the original datagram is stamped with identification number 422. How many fragments are generated? Mention the value of fragmentation offset, flag and identification for each fragment. [4]

8. Write short notes (on any two) [4×2]

(a) ICMP

(b) ALOHA

(c) OSPF

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