

# END TERM EXAMINATION

SIXTH SEMESTER [B.TECH] MAY-JUNE 2017

Paper Code: ETEC-310

Subject: Data Communication and Networks

Time: 3 Hours

Maximum Marks: 75

Note: Attempt any five questions including Q.no.1 which is compulsory.  
Select one question from each unit. Assume missing data suitably.

- Q1 Attempt all parts:- (2.5x10=25)
- (a) Define the three transmission modes and explain.
  - (b) What are the responsibilities of transport layer? Enlist.
  - (c) What are the concerns of physical layer?
  - (d) How is a repeater different from an amplifier and router?
  - (e) What is the different between simple bridge and transparent bridge?
  - (f) What is the function of gateway?
  - (g) What is the difference between polling and selecting?
  - (h) How do guided media differ from unguided media? Which one is more fast? Give reasons.
  - (i) Differentiate between UDP and TCP protocols.
  - (j) Why is adaptive routing superior to non-adaptive routing?

## UNIT-I

- Q2
- (a) What is ISO-OSI model? Draw a block diagram and explain functioning of each layer. (8)
  - (b) For each of the following four networks, discuss the consequences if a connection fails. (2)
    - (i) Five devices arranged in a mesh topology.
    - (ii) Five devices arranged in a star topology (not counting the hub).
    - (iii) Five devices arranged in a bus topology.
    - (iv) Five devices arranged in a ring topology.
  - (c) Given a remainder of 111, a data unit of 10110011, and a divisor of 1001, is there an error in the data unit? (2.5)
- Q3
- (a) Assume that a voice channel occupies a bandwidth of 4kHz. We need to multiplex 10 voice channels with guard bands of 500 Hz using FDM. Calculate the required bandwidth. (4)
  - (b) Consider an  $n \times k$  crossbar switch with  $n$  inputs and  $k$  outputs. (2.5)
    - (i) Can we say that switch acts as a multiplexer if  $n > k$ ?
    - (ii) Can we say that switch acts as a de-multiplexer if  $n < k$ ?
  - (c) Compare the circuit switching, packet switching and message switching using suitable diagram. (6)

## UNIT-II

- Q4
- (a) Discuss sliding window Protocol in data link control? (8)
  - (b) Define and explain the data link layer in IEEE Project 802. Why is this layer divided into sub layers? (4.5)
- Q5
- (a) Discuss stop and wait ARQ error control in data link control. (8)
  - (b) Describe LAN architecture along with bus and tree topologies. (4.5)

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**UNIT-III**

- Q6 (a) Explain difference between ARP and RARP network layer protocol. (6)  
(b) A class C network with IP address of a host as 198.123.46.237. Four sub networks are allowed for this network. What is the subnet mask, number of host per subnet and subnet address? (6.5)
- Q7 (a) Discuss the various design issues in network layer. (6)  
(b) Explain the IPv4 protocol with header format. Compare it with IPv6. (6.5)

**UNIT-IV**

- Q8 (a) Explain Transmission Control Protocol with diagram. (6)  
(b) Discuss about congestion control and traffic management. (6.5)
- Q9 Write the short notes on **any three** of the following:- (12.5)  
(a) Socket Interface  
(b) SMTP  
(c) FTP  
(d) HTTP  
(e) WWW

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