

- (b) Explain the working of the leaky bucket algorithm.
- (c) Explain the connection establishment using Three-Way-Handshaking in TCP.

**3 + 5 + 4 = 12**

**COMPUTER COMMUNICATION & NETWORKING  
(ECEN 3231)**

**Time Allotted : 3 hrs**

**Full Marks : 70**

*Figures out of the right margin indicate full marks.*

*Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.*

*Candidates are required to give answer in their own words as far as practicable.*

**Group – A  
(Multiple Choice Type Questions)**

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) Header of a frame generally contains
 

(a) synchronization bytes	(b) addresses
(c) frame identifier	(d) all of the mentioned.
  - (ii) Which one of the following is the multiple access protocol for channel access control?
 

(a) CSMA/CD	(b) CSMA/CA
(c) both CSMA/CD & CSMA/CA	(d) none of the mentioned.
  - (iii) The technique of temporarily delaying outgoing acknowledgements so that they can be hooked onto the next outgoing data frame is called
 

(a) piggybacking	(b) fletcher's checksum
(c) cyclic redundancy check	(d) none of the mentioned.
  - (iv) Which one of the following task is not done by data link layer?
 

(a) framing	(b) error control
(c) flow control	(d) channel coding.
  - (v) Which of the following field in IPv4 datagram is not related to fragmentation?
 

(a) Flags	(b) Offset
(c) TOS	(d) Identifier.
  - (vi) TCP/IP model does not have \_\_\_\_\_ layer but OSI model have this layer.
 

(a) session layer	(b) presentation layer
(c) application layer	(d) both (a) and (b).

- (vii) Automatic repeat request error management mechanism is provided by  
 (a) media access control sublayer  
 (b) logical link control sublayer  
 (c) network interface control sublayer  
 (d) none of the mentioned.
- (viii) Transport layer protocols deals with  
 (a) application to application communication  
 (b) process to process communication  
 (c) node to node communication  
 (d) none of the mentioned.
- (ix) Which one of the following routing algorithm can be used for network layer design?  
 (a) shortest path algorithm (b) distance vector routing  
 (c) link state routing (d) all of the mentioned.
- (x) In asymmetric key cryptography, the private key is kept by  
 (a) sender  
 (b) receiver  
 (c) sender and receiver  
 (d) all the connected devices to the network.

**Group - B**

2. (a) Categorize the four basic topologies in terms of line configuration and explain each one of them in brief.  
 (b) Discuss the TCP/IP reference model with a neat diagram.

**6 + 6 = 12**

3. (a) Describe the three components of Network Criteria. What are the standards needed for data communication?  
 (b) What are the responsibilities of the network layer in the internet model?  
 (c) What are the header and trailer, and how do they get added and removed?

**(3 + 2) + 4 + 3 = 12****Group - C**

4. (a) Given a 10 bit sequence 1010011110 and a divisor 1011. Find the CRC.

- (b) What is the responsibility of the Data link layer in the OSI model?  
 (c) Explain the functionality of Stop and wait ARQ for lost acknowledgement case.

**6 + 3 + 3 = 12**

5. (a) Briefly explain the frame format in HDLC protocol.  
 (b) Give a comparison between GO-BACK-N ARQ and selection repeat ARQ.

**6 + 6 = 12****Group - D**

6. (a) Differentiate Packet Switching and Circuit Switching. What are the differences between classful addressing and classless addressing in IPv4?  
 (b) State the advantage of IPV4 over IPV6.  
 (c) What is the purpose of subnetting? Find the netid and the hostid of the following IP addresses :  
 (i) 24.64.255.65  
 (ii) 195.44.80.21.

**(2 + 2) + 4 + (2 + 2) = 12**

7. (a) Describe ALOHA with a flowchart.  
 (b) Give a brief description of Unicast, Multicast, and Broadcast routing protocols.

**7 + 5 = 12****Group - E**

8. (a) Compare TCP header and UDP header.  
 (b) Explain the RSA algorithm with an example.  
 (c) In Symmetric-key cryptography, how many keys are needed if Alice and Bob want to communicate with each other?

**4 + 6 + 2 = 12**

9. (a) What is the purpose of providing two separate protocols UDP and TCP in the transport layer?