

Group - E

8. (a) What are the differences between Symmetric key cryptography and Asymmetric key cryptography?
 (b) Explain RSA algorithm with an example.
 (c) Differentiate between ARP and RARP.

3 + 6 + 3 = 12

9. (a) Why do we need a DNS system when we can directly use an IP address?
 (b) What is the encoding used by MIME? What problem does it solve?
 (c) Describe the working of the SMTP protocol.

2 + 3 + 7 = 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) _____ defines how a particular pattern to be interpreted, and what action is to be taken based on that interpretation.
 (a) Semantics (b) Syntax
 (c) Timing (d) None of the above.
- (ii) In _____, the resources need to be reserved during the setup phase; the resources remain dedicated for the entire duration of data transfer phase until the teardown phase.
 (a) datagram switching (b) circuit switching
 (c) frame switching (d) none of the above.
- (iii) We add r redundant bits to each block to make the length $n = k + r$. The resulting n-bit blocks are called _____.
 (a) datawords (b) blockwords
 (c) codewords (d) none of the above.
- (iv) In the _____ method, a station that has a frame to send senses the line. If the line is idle, it sends immediately. If the line is not idle, it waits a random amount of time and then senses the line again.
 (a) non persistent (b) 1-persistent
 (c) p-persistent (d) none of the above.
- (v) Connection establishment in TCP is called _____ handshaking.
 (a) two-way (b) four-way
 (c) one-way (d) none of the above.

- (vi) SMTP is a ____ protocol.
 (a) pull (b) push
 (c) both (a) and (b) (d) none of the above.
- (vii) Automatic repeat request error management mechanism is provided by
 (a) logical link control sublayer
 (b) media access control sublayer
 (c) network interface control sublayer
 (d) none of the above.
- (viii) User datagram protocol is called connectionless because
 (a) all UDP packets are treated independently by transport layer
 (b) it sends data as a stream of related packets
 (c) both (a) and (b)
 (d) none of the above.
- (ix) 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.
- (x) What is data encryption standard (DES)?
 (a) Block cipher (b) Stream cipher
 (c) Bit cipher (d) none of the above.

Group - B

2. (a) What are the key elements of a protocol? What are the two uses for using layered protocols? Mention one possible disadvantage of using layered protocols.
 (b) What kind of error is undetectable by the checksum? Can the value of a checksum be all 0's (in binary)? Defend your answer.
(2 + 2 + 1) + (2 + 2 + 3) = 12
3. (a) "In Selective-Repeat ARQ, sender window size $> 2^{m-1}$." Is it correct? Justify.
 (b) Given a 10 bit sequence 1010011110 and a divisor 1011. Find the CRC.
 (c) A class B network on the internet has a subnet mask of 255.255.240.0. What is the maximum number of hosts per subnet?
3 + 6 + 3 = 12

Group - C

4. (a) In a wireless LAN, station A is assigned IFS = 5 milliseconds and station B is assigned IFS = 7 millisecond. Which station has higher priority? With relevant diagram explain the idea behind CSMA/CA in detail?
 (b) Draw and explain the frame format of HDLC protocol. Also setup a Asynchronous balanced mode connection between two Stations and explain the information transfer between them under Selective Repeat protocol.
(1 + 4) + 7 = 12
5. (a) Differentiate static routing with dynamic routing. Explain various fields of a typical routing table.
 (b) What is flooding? Explain count to infinity problem.
 (c) What are non-persistence, 1-persistence & p-persistence strategies?
(2 + 3) + (2 + 2) + 3 = 12

Group - D

6. (a) What is the purpose of an ICMP redirection message? Why do you think we need only one RIP update message, but several OSPF update messages? With a diagram explain the growing window of TCP?
 (b) How is a IPv4 carrying out the flow control mechanism? Compare the TCP header and the UDP Header. List the fields in the TCP header that are missing from the UDP header. Give the reason for their absence.
(2 + 2 + 2) + (2 + 1 + 1 + 2) = 12
7. (a) State the advantage of IPV6 over IPV4.
 (b) An organization is granted the block 192.168.10.0/27. The administrator wants to create 32 subnets.
 (i) Find the subnet mask.
 (ii) Find the number of addresses in each subnet.
 (iii) Find the first and last address in the first subnet.
 (iv) Find the first and last address in the last subnet.
 (c) What is the maximum and minimum size of a TCP header?
4 + (1 + 1 + 2 + 2) + 2 = 12