COMPUTER COMMUNICATION NETWORKS
(MCAP 1202)

Time Allotted : 3 hrs   **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and
<u>any 5 (five)</u> from Group B to E, taking <u>at least one</u> 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)   Before data can be transmitted they must be transformed to _____.
   (a) Periodic signal   (b) electromagnetic signal
   (c) aperiodic signal   (d) low-frequency sine waves.

   (ii)   What is the major factor that makes coaxial cable less susceptible to noise than twisted-pair cable?
   (a) Inner conductor   (b) Diameter of cable
   (c)   Outer conductor   (d) Insulating material

   (iii)   The access protocol used by traditional Ethernet is _____.
   (a) ALOHA   (b) Slotted ALOHA
   (c) CSMA   (d) CSMA/CD.

   (iv)   "Parity bits" are used for which of the following purposes?
   (a) Encryption of data   (b) To transmit faster
   (c) To detect errors   (d) To identify the user.

   (v)   In a Go-Back-N ARQ, if the window size is 63, what is the range of sequence numbers?
   (a) 0 – 63   (b) 0 – 64   (c) 1 – 63   (d) 1 – 64.

   (vi)   When the hop-count field reaches zero and the destination has not been reached, a _____ error message is sent.
   (a) Destination-unreachable   (b) Time-exceeded
   (c)Parameter-problem   (d) Redirection.

   (vii)   Which of the following transmission directions listed is not a legitimate channel?
   (a) Simplex   (b) Half Duplex
   (c) Full Duplex   (d) Double Duplex.

(viii) Which one of the following defines the server program?
(a) Ephemeral port number　　　　　　(b) IP address
(c) Well-known port number　　　　　　(d) Physical address.

(ix) A client machine usually needs _____ to send email.
(a) Only SMTP　　　　　　　　　　　　(b) Only POP
(c) Both SMTP and POP　　　　　　　　(d) Either SMTP or POP.

(x) When data and acknowledgement are sent on the same frame, it is called
(a) Backpacking　　　　　　　　　　　(b) Piggybacking
(c) Bidirectional transmission　　　　　(d) ARQ.

Group – B

2. (a) Encode the bit stream 01001100011 using
(i)RZ, (ii) NRZ, (iii) Manchester, (iv) Differential Manchester.

(b) Differentiate between ASK, FSK and PSK.

6 + 6 = 12

3. (a) What are the advantages of optical fibre as a transmission media?

(b) Write short notes on – PCM.

(c) Define multiplexing. Explain TDM with proper diagram.

3 + 4 + 5 = 12

Group – C

4. (a) Generate CRC code for the data word of 110010101. The divisor is 10101.

(b) Explain the concept of bridged Ethernet and switch Ethernet with the help of appropriate diagrams.

6 + 6 = 12

5. (a) In sliding window flow control, if the sequence number is of n bits, then show that the maximum size of the window is $2^n – 1$.

(b) How is CSMA a clear improvement over ALOHA? How is it further improved by implementing CSMA/CD?

(c) What do you understand by piggybacking in sliding window protocols?

6 + 4 + 2 = 12

Group – D

6. (a) What is the difference between Distance Vector Routing and Link State Routing? Give name of 2 protocols of the above mentioned routing algorithm.

(b) "Router is a network layer communication device" – Explain why?

    (c)   Differentiate between connection-oriented and connection-less services implemented by the network layer.

    (d)   What is IP addressing scheme?

4 + 3 + 3 + 2 = 12

7. (a)   What is IP addressing? What are the different classes of IP addressing? What is the difference between static and dynamic IP's?

    (b)   What are the advantages of IPv6 over IPv4?

    (c)   What is default mask and broadcast address for class B? Specify the private IP range for class A address.

(1 + 2 + 2) + 5 + 2 = 12

Group – E

8. (a)   State the differences between TCP and UDP.

    (b)   What is congestion? Explain the leaky bucket algorithm for congestion

    (c)   What advantages does TCP have over UDP? What are the features for which may TCP be a reliable protocol?

4 + 4 + 4 = 12

9. (a)   Explain the FTP protocol briefly.

    (b)   SMTP is used for emailing services. Then why is POP3 also necessary for emailing service?

    (c)   Discuss MIME.

    (d)   What are categories of web document?

4 + 4 + 2 + 2 = 12

Department & Section	Submission Link
MCA	https://classroom.google.com/c/MzQ4Nzg4NTMwODQ1/a/Mzc3MjI0MDc3MzEw/details