COMPUTER COMMUNICATION NETWORKS
(MCAP 2201)

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

(ii) "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

(iii) What kind of transmission medium is most appropriate to carry data in a computer network that is exposed to electrical interferences?
(a) Unshielded twisted pair (b) Optical fiber
(c) Coaxial cable (d) Microwave

(iv) A collection of hyperlinked documents on the internet forms the ?.?
(a) World Wide Web (WWW) (b) E-mail system
(c) Mailing list (d) Hypertext markup language

(v) Which of the following protocols is the bit-oriented protocol?
(a) SSL (b) http
(c) HDLC (d) All of the these

(vi) Which of the following cannot be used as a medium for 802.3 Ethernet?
(a) A thin coaxial cable (b) A twisted pair cable
(c) A microwave link (d) A fiber optical cable

(vii) An Aloha network uses an 18.2 kbps channel for sending message packets of 100 bits long size. Calculate the maximum throughput.
(a) 5999 (b) 6900
(c) 6027 (d) 5027

(viii) Given the IP address 201.14.78.65 and the subnet mask 255.255.255.224, what is the subnet address?

(a) 201.14.78.32 (b) 201.14.78.65
(c) 201.14.78.64 (d) 201.14.78.12

(ix) Dijkstra's algorithm is used to _____.

(a) Create LSAs (b) Calculate the routing tables
(c) Flood an internet with information (d) Create a link state database

(x) 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

Group – B

2. (a) How does NRZ-L differ from NRZ-I?

(b) Compare the two methods of serial transmission. Discuss the advantages and disadvantages of each.

(c) What is digital to analog modulation? Describe the different type of digital to analog modulation technique.

3 + 4 + 5 = 12

3. (a) What is multiplexing? Explain in detail about various types of multiplexing.

(b) What is the purpose of cladding in an optical fiber? What is the difference between omnidirectional waves and unidirectional waves?

(c) What is quantization?

6 + 4 + 2 = 12

Group – C

4. (a) What are the different types of error detection methods? Explain the CRC error detection technique with a example.

(b) Explain sliding window technique. Why it used and what is are the advantages of sliding window technique?

6 + 6 = 12

5. (a) What is high level data link control (HDLC)? Explain HDLC frame format in details.

(b) Describe carrier sense multiple access protocol. What is difference between CSMA/CD and CSMA/CA?

(c) What is the advantage of FDDI over a basic token ring?

4 + 6 + 2 = 12

Group – D

6. (a) In a class C subnet, we know the IP address of one of the hosts and the mask as given below:

IP address: 182.44.82.16
Mask: 255.255.255.192

What is the first address (network address)?

(b) What is the MTU and how is fragmentation related to it?

(c) What is the purpose of a Link State Advertisement?

(d) What is Transient Link?

(e) Why IGMP used?

2 + 3 +3 + 2 + 2 = 12

7. (a) An ISP is granted a block of addresses starting with 190.100.0.0/16 (65,536 addresses). The ISP needs to distribute these addresses to three groups of customers as follows:

(i) The first group has 64 customers; each needs 64 addresses.
(ii) The second group has 128 customers; each needs 128 addresses.
(iii) The third group has 128 customers; each needs 32 addresses.

Design the subblocks and find out how many addresses are still available after these allocations.

(b) Explain the role of SNMP in network monitoring and management.

8 + 4 = 12

Group – E

8. (a) Explain the architecture of WWW. Discuss client and server side functionality of this architecture.

(b) Discuss the transport layer service primitives. What do you understand by 3 way hand shake Technique? Also discuss the TCP connection management.

6 + 6 = 12

9. (a) Explain Congestion Prevention Policies and how does it work?

(b) What are the two parts of addressing system in SMTP?

(c) Discuss MIME.

(d) What are categories of web document?

6 + 2 + 2 + 2 = 12

Department & Section	Submission Link
MCA	https://classroom.google.com/c/MzExODk1NTcxODgx/a/MzcxNjA3NjE5NzUx/details