Enroll. No._____

MARWADI UNIVERSITY

Faculty of Engineering

INFORMATION AND COMMUNICATION TECHNOLOGY

BACHELOR OF TECHNOLOGY

SEM: 5th **MU FINAL EXAM** **DECEMBER : 2022**

Subject: - COMPUTER NETWORKS (01CT0503) **Date:- 21/12/2022**

Total Marks:-100 **Time: - 2:00 PM to 5:00 PM**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1. Answer the following questions.

(a) Chose the correct option. [10]

(1) Hamming distance between d(000,011) = ____ and d(000,101) = ____.
- (a) 2, 2
- (b) 0, 0
- (c) 1, 1
- (d) 2, 1

(2) Port address has _____ bits.
- (a) 128
- (b) 48
- (c) 32
- (d) 16

(3) MAC address has _____ bits.
- (a) 128
- (b) 48
- (c) 32
- (d) 16

(4) _____ is/are reliable transport layer protocol/s.
- (a) TCP
- (b) UDP
- (c) TCP and UDP
- (d) HDLC

(5) _____ relates to point-to-point traffic between sender and receiver.
- (a) Congestion control
- (b) Flow control
- (c) IP address
- (d) None of the given

(6) _____ quality of service in terms of jitter is required for file transfer service.
- (a) Low
- (b) High
- (c) Moderate
- (d) Very high

(7) _____ is/are part of IP packet.
- (a) Version

(b) TTL
(c) Source IP address
(d) All of the mentioned

(8) The packet of information at the application layer is called _____.
(a) bits
(b) frames
(c) segments
(d) message

(9) The first section of URL identifier is _____.
(a) protocol
(b) path
(c) host
(d) port

(10) Application layer protocol defines _____.
(a) types of messages exchanged
(b) message format, syntax and semantics
(c) rules for when and how processes send and respond to messages
(d) all of the mentioned

(b) Answer the question in short. [10]
(1) List the devices that works on Data link layer.
(2) What is the need of Port address?
(3) Write Class A IP address.
(4) Write by default subnet mask of Class A IP address.
(5) What is the need of subnet mask?
(6) What is the limitation of Link state routing algorithm?
(7) What was the biggest problem of Distance Vector routing algorithm?
(8) What is the need of NAT protocol?
(9) What is Piggybacking?
(10) List the devices that works on Network layer.

Question: 2. Answer the following questions.

(a) If a periodic signal is decomposed into four sine waves with frequencies of 200, 300, 700, and 800 Hz, what is its bandwidth? Draw the spectrum, assuming all components have a maximum amplitude of 5 V. [8]

(b) Sketch and compare OSI model with TCP/IP model. [8]

OR

(b) Define following terms: [8]
1. Fragmentation
2. Interaction between various layers of OSI model (Virtual and actual communication)

Question: 3. Answer the following questions.

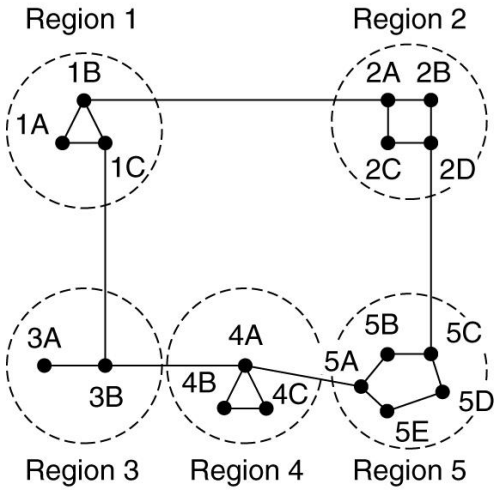
(a) Explain bit-oriented Data link layer protocol in detail. [8]
(b) Explain framing by character count using an example. [4]
(c) Sketch and explain CRC code. [4]

OR

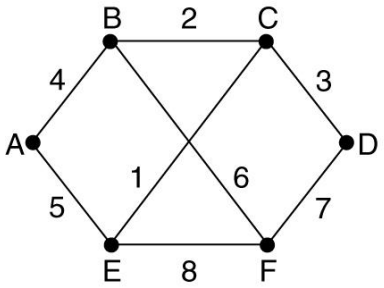
(a) Sketch and explain Selective Repeat ARQ protocol. Calculate the receiver window size for Selective Repeat ARQ if m=2. [8]
(b) Compare Pure ALOHA with Slotted ALOHA protocol. [4]
(c) Sketch and explain CSMA protocol. [4]

Question: 4. Answer the following questions.

(a) Explain the Hierarchical routing algorithm. Draw the Hierarchical routing table for Node 1A for the below given subnet. [8]



(b) Explain Link state routing algorithm. Create link state packets for all the nodes of the below given subnet. [8]



OR

(a) Compare Public IP address with Private IP address with example. [8]
(b) Compare connection-oriented service with connection less service. [8]

Question: 5. Answer the following questions.

(a) Sketch and explain Token bucket algorithm. [6]
(b) Sketch and explain leaky bucket algorithm. [6]
(c) What is congestion? Why congestion occurs? [4]

OR

(a) Sketch and explain the process of Hop-by-Hop choke packet. [6]
(b) What is Jitter? Compare High jitter with Low jitter with its graphs. [6]
(c) Define congestion prevention policies at Transport layer. [4]

Question: 6. Answer the following questions.

(a) Explain the Simple Mail Transfer Protocol with its diagram. [8]
(b) Compare Dynamic document with Active document in the web document domain. [4]
(c) Explain Multipurpose Internet Mail Extension in detail. [4]

OR

(a) Sketch and explain DNS with example. [8]
(b) Explain Uniform Resource Locator with an example. [4]
(c) Sketch and explain POP. [4]

---Best of Luck---