Enroll. No._____

MARWADI UNIVERSITY

Faculty of Technology

INFORMATION AND COMMUNICATION TECHNOLOGY

BACHELOR OF TECHNOLOGY

SEM: 5 **MU FINAL REMEDIAL** **MAY: 2023**

Subject: - Computer Networks (01CT0503) **Date:- 15/5/2023**

Total Marks:-100 **Time: -**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Do not write/sign/indication/tick mark anything other than Enroll No. at a specific place on the question paper.**

Question: 1. Answer the following questions.

(a) Chose the correct option. [10]

(1) Router works on _____ layer.
- (a) Physical
- (b) Data link
- (c) Network
- (d) Transport

(2) Switch works on _____ layer.
- (a) Physical
- (b) Data link
- (c) Network
- (d) Transport

(3) Hub works on _____ layer.
- (a) Physical
- (b) Data link
- (c) Network
- (d) Transport

(4) IP address is given on _____ layer.
- (a) Physical
- (b) Data link
- (c) Network
- (d) Transport

(5) The network layer is concerned with _____.
- (a) bit-by-bit delivery
- (b) host to host delivery
- (c) process-to-process delivery
- (d) port-to-port delivery

(6) The transport layer is concerned with _____.
- (a) bit-by-bit delivery
- (b) host to host delivery
- (c) process-to-process delivery
- (d) port-to-port delivery

(7) _____ is/are reliable transport layer protocol/s.
- (a) TCP
- (b) UDP

(c) TCP and UDP
(d) HDLC

(8) Port address is given on _____ layer.
(a) Physical
(b) Data link
(c) Network
(d) Transport

(9) Physical address is given on _____ layer.
(a) Physical
(b) Data link
(c) Network
(d) Transport

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

(b) Answer the question in short. [10]
(1) Define VLAN?
(2) Where MAC address is given?
(3) What is the need of sequence number?
(4) Given IP address is belonged to which class? IP address: 10.0.1.1
(5) Write by default subnet mask of Class C IP address.
(6) What is subnetting?
(7) Explain connection-oriented service.
(8) What is the need of routing protocol?
(9) Is IP address: 192.168.10.1 Public or Private?
(10) Define connection less service.

Question: 2. Answer the following questions.

(a) Sketch OSI model and mention the roles and responsibilities of each layer. [8]

(b) If a periodic signal is decomposed into five sine waves with frequencies of 500, 600, 900, 1000, and 1800 Hz, what is its bandwidth? Draw the spectrum, assuming all components have a maximum amplitude of 5 V. [8]

OR

(b) If a non-periodic signal is decomposed into five sine waves with frequencies of 900, 1000, 1200, 1500, and 2000 Hz, what is its bandwidth? Draw the spectrum, assuming all components have a maximum amplitude of 5 V. [8]

Question: 3. Answer the following questions.

(a) Sketch and explain HDLC protocol with its framing structure. [8]
(b) Explain any one error detection code with example. [4]
(c) Explain framing by character count using an example. [4]

OR

(a) Sketch and explain Go-Back-N ARQ protocol. Calculate the window size for Go-Back-N ARQ if m=2. [8]
(b) Explain the need of MAC layer. List various categories of MAC layer. [4]
(c) Compare 1-Persistent with Non-persistent method. [4]

Question: 4. Answer the following questions.

(a) Sketch and explain shortest path finding algorithm with an example. [8]
(b) Compare virtual circuit with datagram subnet. [8]

OR

(a) Compare Public IP address with Private IP address with example. [8]
(b) Compare static routing algorithm with dynamic routing algorithm. [8]

Question: 5. Answer the following questions.
(a) Sketch and explain leaky bucket algorithm. [6]
(b) Compare Congestion control with Flow control. [6]
(c) Define congestion prevention policies at Transport layer. [4]

OR

(a) What is congestion? What happens if congestion occurs? Which parameters affects congestion? [6]
(b) Sketch and explain Token bucket algorithm. [6]
(c) Compare High jitter with Low jitter with its graphs. [4]

Question: 6. Answer the following questions.
(a) Sketch and explain DNS with example. [8]
(b) How Multipurpose Internet Mail Extension works? [4]
(c) Sketch and explain SMTP. [4]

OR

(a) How File Transfer Protocol works? Explain with an example and diagram. [8]
(b) Sketch and explain POP. [4]
(c) Describe the various categories of Web document. [4]

---Best of Luck---