**MARWADI UNIVERSITY**

**Faculty of Technology** **Enroll. No._____**

Department of Information & Communication Technology

B.TECH. **SEM:V** **WINTER-2019**

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**Subject: - Computer Networks (01CT0503)** **Date:- 14-10-2019**

**Total Marks:-100** **Time: - 03:00 hours**

**Instructions:**

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

**Question: 1**

(a) Select one correct option from the given MCQ [10]

1. In _____ error correction, the receiver corrects errors without requesting retransmission.
(a) backward (b) onward
(c) forward (d) None of the above

2. In modulo-2 arithmetic, _____ give the same results.
(a) Addition and multiplication (b) Addition and division
(c) Addition and subtraction (d) None of the above

3. In Go-Back-*N* ARQ, if frames 4, 5, and 6 are received successfully, the receiver may send an ACK _____ to the sender.
(a) 4 (b) 5
(c) 6 (d) 7

4. In _____ framing, we need a delimiter (flag) to define the boundary of two frames.
(a) Fixed size (b) Variable-size
(c) Standard (d) None of above

5. In the _____ method, all data exchanges must be made through the primary device even when the ultimate destination is a secondary device
(a) reservation (b) polling
(c) token passing (d) None of above

6. The maximum throughput for pure ALOHA is _____ per cent.
(a) 12.2 (b) 18.4
(c) 36.8 (d) None of the above

7. A _____ regenerates a signal, connects segments of a LAN, and has no filtering capability.
(a) repeater (b) bridge
(c) router (d) None of the above

8. UDP is called a _____transport protocol.
(a) Connectionless reliable (b) Connection oriented reliable
(c) Connection oriented unreliable (d) Connectionless unreliable

9. In a _____name space, each name is made of several parts.
(a) flat (b) organized
(c) hierarchical (d) All of the above

10. _____ is more powerful and complex than _____
(a) POP3,IMAP4 (b) IMAP4,POP3
(c) SMTP,POP3 (d) None of the above

(b) Answer in short for the following questions

1. What is the difference between Hub and Switch ? [1]
2 What is the logic behind name of Ethernet standard 10Base2. [1]
3. What is the advantage and disadvantage of fixed size and variable size framing? [2]
4. Write down range for IP classes A, B C, D . [2]
5. Demonstrate node to node, Host-to Host and process to process data delivery. [2]
6. What are the responsibilities of user agent in e-mail ? [2]

**Question: 2**.

(a) Compare flow control protocols for the noiseless channel. Support your answer with design figure, pseudo code, flow diagram and analysis. [8]

(b) What do you mean by sliding window in Go-back-N ARQ protocol? How it is differ in selective repeat ARQ. Why design of window size should be limited? Demonstrate the issue if window size exceed the range. [8]

OR

(b) (i) What do you mean by Piggybacking? Demonstrate with design figure of piggybacking in Go-Back-N ARQ. [4]
(ii) Demonstrate different scenarios with the help of flow diagram for the cases of frame lost, acknowledgement lost, duplication of frame. [4]

**Question: 3**

(a) Classify multiple access protocols. Analyze any one protocol in detail. [8]

(b) Draw and explain throughput Vs offered load for pure ALOHA, slotted ALOHA, 1-persistnet, non-persistent, 0.5 persistent methods for Carrier sense multiple access. [4]

(c) What is spanning tree arrangement and why it is required? [4]

OR

(a) Compare CSMA-CD and CSMA-CA. [8]

(b) Draw unipolar NRZ, unipolar RZ, AMI and differential Manchester for any 10 bit digital binary data. [4]

(c) Write a brief note on Bluetooth. [4]

**Question: 4**

(a) Demonstrate how Hamming code method is used for the error detection and correction. [8]

(b) Demonstrate how burst error can be minimized. [4]

(c) What do you mean by Hamming distance? How minimum Hamming distance is useful to detect capabilities of error detection and correction. Demonstrate with suitable example. [4]

OR

(a) What is the difference between systematic and non-systematic code word. Derive code word using (7,4) CRC systematic and non-systematic method for the give data words, 1101, 1000, 0011, 1111. [8]

(b) Explain the process of two level parity method for error detection and correction. [4]

(c) What do you mean by syndrome? What is the role of syndrome to identify error in the received code word? Explain the steps of CRC decoding. [4]

**Question: 5**

(a) What is the difference between static and dynamic routing algorithms? Demonstrate shortest path routing with figure for each stage of metric calculation. [8]

(b) Write a brief note on DHCP. [4]

(c) What is the problem in flooding and how it can be resolved? [4]

OR

(a) Why distance vector routing is falls under dynamic algorithm. Demonstrate calculation of route considering some network and distance vector. [8]

(b) Where RARP and BOOTP techniques are used in the networking? Compare both. [4]

(c) What is the difference between connection oriented and connection less packet routing service? Explain with the help of subnet and routing table. [4]

**Question: 6**

(a) Write a note on Domain Name System. [8]

(b) Classify SMTP and POP3 in e-mail. [4]

(c) Explain User Datagram Protocol (UDP). [4]

OR

(a) Illustrate HTTP and WWW in web. [8]

(b) Explain the structure of e-mail. [4]

(c) What are the different port numbers ? How they are differ to each other ? what is the role of each in transport layer? [4]

**---Best of Luck---**

# Course Outcome Wise Questions

| Subject Code | **01CT0503** | Subject | **COMPUTER NETWORKS** |
|---|---|---|---|

| CO No. | Course Outcome |
|---|---|
| **CO1** | Understand the functionality of various protocols, models and networks. |
| | |
| **CO2** | Analyze various flow and error control algorithms |
| | |
| **CO3** | Analyze different medium access protocols and network hardware component. |
| | |
| **CO4** | compare various static and dynamic routing protocol. |
| | |
| **CO5** | Understand various transport services, protocol and application layer functionalities. |
| | |
| **CO6** | Built and test various network topologies and routing protocols for various networks scenarios. |
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| Blooms Taxonomy | Question List |
|---|---|
| **Remember / Knowledge** | |
| **Understand** | |
| **Apply** | |
| **Analyze** | |
| **Evaluate** | |
| **Higher order Thinking / Creative** | |