PTotal No. of Questions: 6 *Total No. of Printed Pages:2*

Enrollment No.....

Faculty of Science / Engineering
End Sem Examination Dec-2023
CA3CO10 Computer Networks

Programme: BCA / BCA-MCA (Integrated) Branch/Specialisation: Computer Application

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. Keyboards and traditional monitors are examples of _____ devices. **1**
(a) Simplex (b) Half duplex
(c) Full duplex (d) Hybrid

ii. In a mesh topology, we need _____ duplex-mode links. (n is the number of nodes) **1**
(a) n-1 (b) n(n -1) /2 (c) n/2 (d) (n-1)/2n

iii. The physical layer coordinates the functions required to transmit a _____ over a physical medium. **1**
(a) Bitstream (b) Frame
(c) Packet (d) The remainder

iv. If a composite signal contains frequencies between 1000 Hz and 5000 Hz, its bandwidth is_____ . **1**
(a) 1000 Hz (b) 5000 Hz (c) 4000 Hz (d) 6000 Hz

v. In Selective Repeat ARQ, the size of the sender and receiver window must be at most one-half of _____. **1**
(a) $2m^2$ (b) 2m (c) m^2 (d) 2^m

vi. Bit stuffing is the process of adding one extra 0 whenever _____ consecutive 1s follow a 0 in the data. **1**
(a) Five (b) Four (c) Three (d) Six

vii. Find the class of below given address: **1**
14.23.120.8
(a) Class C (b) Class A (c) Class D (d) Class B

viii. Which of the following operate at the presentation layer? **1**
(a) FTP (b) SMTP (c) TFTP (d) JPEG

ix. Application layer is the____ layer in the OSI model. **1**
(a) 6^{th} (b) 7^{th} (c) 5^{th} (d)4^{th}

x. Which of the following is incorrect about User Datagram Protocol (UDP)? **1**
(a) UDP is unreliable transport protocol.
(b) There is no window mechanism in UDP.
(c) There is a robust error control mechanism in UDP.
(d) The receiver may overflow with incoming messages.

Q.2 i. Identify the five components of a data communications system. **2**
ii. What is the difference between a port address, a logical address, and a physical address? **3**
iii. What is OSI Model? Explain the functions of each layer. **5**
OR iv. Discuss various types of networks topologies in computer network. Also discuss various advantages and disadvantages of each topology. **5**

Q.3 i. Define data rate with an example. **2**
ii. Explain the transmission media in detail. **8**
OR iii Explain the public switched telephone network. **8**

Q.4 i. What are the different types of errors? Explain LRC by an example. **3**
ii. Explain any one flow control protocol for noisy channels. **7**
OR iii. Explain why collision is an issue in a random-access protocol but not in controlled access or channelizing protocols. **7**

Q.5 i. What are the differences between classfull addressing and classless addressing in IPv4? **4**
ii. Write down the difference between the link state and distance vector routing algorithm. **6**
OR iii. Explain about IPv6. **6**

Q.6 Answer the following. (any two)
i. Write a short note on congestion control algorithms. **5**
ii. Explain application layer design issues. **5**
iii. Discuss cryptography and types of network attacks. **5**

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Marking Scheme

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Q.1	i)	(a) Simplex		**1**
	ii)	(b) n(n -1) /2		**1**
	iii)	(a) Bitstream		**1**
	iv)	(c) 4000 Hz		**1**
	v)	(d) 2^m		**1**
	vi)	(a) five		**1**
	vii)	(b) class A		**1**
	viii)	(a) FTP		**1**
	ix)	(b) 7th		**1**
	x)	(a) UDP is unreliable transport protocol		**1**
Q.2	i.	Five components of a data communications system.		**2**
	ii.	Difference between port address	1 Mark	**3**
		Logical address,	1 Mark	
		Physical address	1 Mark	
	iii.	Definition of OSI Model	1 mark	**5**
		Functions of each layer	4 marks	
OR	iv.	Various types of networks topologies	1 mark	**5**
		Advantages and	2 marks	
		disadvantages of each topology.	2 marks	
Q.3	i.	Definition of data rate.	1 mark	**2**
		Example of data rate.	1 mark	
	ii.	Explanation of the transmission media.		**8**
		Guided	4 Marks	
		Unguided	4 Marks	
OR	iii.	Explanation of the Public Switched Telephone Network.		**8**
		Diagram -	4 Marks	
		Explanation -	4 Marks	
Q.4	i.	What are the different types of errors?	1 mark	**3**
		Explanation of LRC by an example.	2 marks	
	ii.	Explanation of any one flow control protocol for noisy channels.		**7**
		Diagram -	4 Marks	
		Explanation -	3 Marks	
OR	iii.	Explanation of why collision is an issue in a random-access protocol but not in controlled access or channelizing protocols.	4 Marks	**7**
Q.5	i.	Differences between classfull addressing and classless addressing in IPv4?	2 Marks 2Marks	**4**
	ii.	Difference between the link state and distance vector routing algorithm.	Each Difference -1Marks	**6**
OR	iii.	Explanation about IPv6.		**6**
		Diagram -	4 Marks	
		Explanation-	3 Marks	
Q.6		Answer the following. (any two)		
	i.	Short note on congestion control algorithms		**5**
		Types -	3 Marks	
		Theory -	2 Marks	
	ii.	Explanation of Application layer design issues	Each Issue 1Marks	**5**
	iii.	Discussion of Cryptography	2.5 marks	**5**
		types of network attacks.	2.5 marks	

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