K. J. Somaiya College of Engineering, Mumbai-77
(Autonomous College Affiliated to University of Mumbai)
Semester: **August–November 2021**
In-Semester Examination

Class: TY B. Tech
Branch: COMPUTER ENGINEERING   **Semester :   V**
Full name of the course: **Course Code: 2UCC502**
Duration: 1hr.15 min (attempting questions) +15 min (uploading) Max. Marks: 30

Q. No	Questions	Marks

Q. 1	Objective questions
	
	1. In CDMA, as per the Walsh matrix the 3rd chip sequence for a network with 8 stations would be: (2M)
	    a. {+1 +1 +1 +1 +1 +1 +1 +1}
	    b. {+1 +1 -1 -1 +1 +1 -1 -1 }
	    c. {+1 -1 +1 -1 +1 -1 +1 -1}
	    d. {+1 -1 -1 +1 +1 -1 -1 +1}
	
	2. Min hamming distance in the two codes C1: 10110111 and C2:01101101 is: (1M)
	    a. 4
	    b. 3
	    c. 1
	    d. 5
	
	3. Cellular network a connection oriented and reliable network. State True or False. (1M)
	
	4. For *5* devices in a network what is the number of cable links required for a mesh, ring, bus and star topology. (2M)
	    a. 10,5,1,5
	    b. 20,5,1,5
	    c. 10,4,1,4
	    d. None of the above
	
	5. Which of the layer/s in the OSI model are responsible for flow control? (1M)
	    a. Data link Layer
	    b. Transport Layer
	    c. Physical layer
	    d. Both a and b
	
	6. In CSMA/CA _____ can be used to prioritize one station over others. (1M)
	    a. Contention window
	    b. Inter frame space
	    c. Persistence method
		10M

	d. None of the above
	
	 7. Which of the following is a specific address? (1M)
	      a. IP address
	      b. Port address
	      c. MAC address
	      d. Email address
	
	 8. Which one the following is not true for Piggybacking? (1M)
	      a. Improves channel bandwidth usage
	      b. Delays acknowledgements
	      c. Blocks the services temporarily
	      d. Is used for access control	

Q. 2	Solve Any **Two**
	
	 A. Explain briefly functionalities of following layers in ISO OSI reference model:
	      a. Application layer
	      b. Presentation Layer
	      c. Transport layer
	      d. Network layer
	      e. Data link layer
	
	 B. Draw and explain a hybrid topology with a star backbone connecting four ring networks.
	
	 C. State key difference between bit-stuffing and byte-stuffing. Assuming byte oriented framing protocol, byte stuff the following data.
	
	 | ESC | | | FLAG | | | ESC | ESC | ESC | | FLAG |
		10 M

Q. 3	Solve Any **Two**
	
	 A. In CRC, given the dataword 1010011110 and the divisor 10111,
	      a. Compute the 13 bit codeword at the sender site.
	      b. Represent the information (dataword and divisor) using polynomials
	
	 A. Consider a scenario wherein two stations are communicating using sliding window protocol with a window size of 4.
	 Assuming the physical destination address of third frame is corrupted during the transmission. What happens to the frame?
	 What will be the next course of action taken by the sender if it uses:
	 a. Go-back-N ARQ
	 b. Selective repeat ARQ? Illustrate the scenario with window positions at sender's and receiver's side.
	
	 B. A slotted ALOHA network transmits 100-bit frames on a shared channel of 100 kbps. What is the throughput if the system (all stations together) produces
	 a. 1000 frames per second
	 b. 500 frames per second c. 250 frames per second.
		10M