Room ... 30

VIT UNIVERSITY
(Estd. u/s 3 of UGC Act 1956)
VELLORE ■ CHENNAI
www.vit.ac.in

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING (SCOPE)

CAT-I Examination

Fall Semester 2018-19

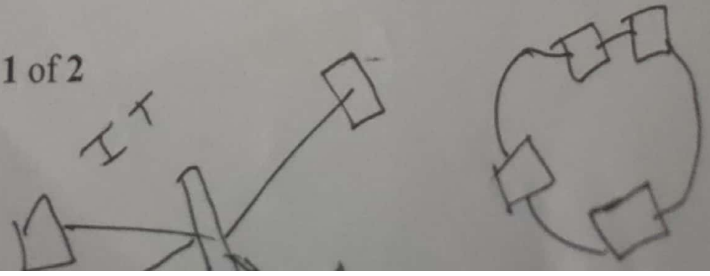
Programme and Branch: B.Tech – CSE | **Max. Marks: 50**

Course Code : CSE1004 | **Slot: G2+TG2**

Course Title: Network and Communication | **Duration: 1.5 hours**

Answer ALL Questions (5 X10 = 50 Marks)

S.No	Answer All Questions	Marks
1.	Suppose that Alice is sending Bob a message over the Internet. Alice's computer is directly connected to router1 and Bob's to router2. Router1 and router2 are directly connected. Thus, Alice's communication with Bob goes to router1, then to router2, and finally to Bob's computer. Assume the message is small enough that it does not need to be broken down into smaller units as it is processed by the lower layers. Illustrate your answer using a diagram.	
	(i) What happens to Alice's message as it gets ready to be transmitted, i.e, as it goes down the protocol stack on Alice's computer? Show what happens to the message at each protocol layer. Is this process called encapsulation or de-encapsulation?	(3)
	(ii) What happens to the message as it is processed by router1? Show what happens at each layer.	(2)
	(iii) What happens to the message as it is processed by router2? Show what happens at each layer.	(2)
	(iv) What happens to the message when it arrives at Bob's computer as it goes up the protocol stack? Is this process called encapsulation or de-encapsulation? Show what happens at each layer.	(3)
2.	a) Highlight the roles and responsibilities of any 3 standard organization bodies involved in computer networking.	(5)
	b) What is the need of protocol in communication? Discuss the key elements of protocols.	(5)
3	Indian Bank at VIT campus has implemented a star topology in their IT department. All computers are connected to the central switch. In the Loan department, all computers are connected in closed loop format. Network	(10)



administrator, John wants to connect these two networks so that data can be shared among different departments.

i) Which network topology would be most appropriate in this situation?

ii) Which type of network would you suggest for this scenario?

4 a) List and discuss the factors which cause error to the transmitted data. (5)
Error control can be performed at data link and at the transport layer. Which layer provides best error control and why?

b) Suppose the data to be transmitted is 1011001. Generate the hamming code using the data word and assume 6^{th} bit is corrupted during transmission. Perform the receiver side calculation on the received message. (5)

5 a) Consider station A wants to send a message to station X. These two stations are connected using 5 different switches. For circuit switching and datagram packet switching network calculate the end-to-end delay to transmit a single packet from A to X. (5)

b) Suppose the packet is 1,500 bytes, the propagation speed on all three links is $2.5 * 10^8$ m/s, the transmission rates of all three links are 2 Mbps, the packet switch processing delay is 3 msec, the length of the first link is 5.000 km, the length of the second link is 4,000 km, and the length of the last link is 1,000 km. For these values, what is the end-to-end delay? (5)