VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)
CHENNAI

Reg. Number:	23MCAL030

Continuous Assessment Test(CAT) – I - FEB 2024

Programme	:	Master of Computer Applications	Semester	:	WIN 23-24
Course Code & Course Title	:	PMCA505L & Data Communication and Networking	Class Number	:	CH202324050 1382
Faculty	:	Dr. R. Sendhil	Slot	:	C2+TC2
Duration	:	90 Minutes	Max. Mark		50

General Instructions:

- Write only your registration number on the question paper in the box provided and do not write other information.
- Use statistical tables supplied from the exam cell as necessary
- Use graph sheets supplied from the exam cell as necessary
- Only non-programmable calculator without storage is permitted.

Answer all questions

Q. No	Sub Sec.	Description	Marks
1	a.	Assume that you are requesting a video in a youtube from a browser. Illustrate the process with a neat diagram by considering the different layers of Network reference model. **[6 Marks]**	10 Marks
	b.	Explain the protocols involved in each layer of the OSI Model. **[4 Marks]**	
2		Assume six devices are arranged in a mesh topology. How many cables are needed? How many ports are needed for each device? **[2 marks]** For each of the following four networks, discuss the consequences if a connection fails. **[4 Marks]** i. Five devices arranged in a mesh topology ii. Five devices arranged in a star topology (not counting the hub) iii. Five devices arranged in a bus topology iv. Five devices arranged in a ring topology Lets assume you have two computers connected by an Ethernet hub at home. Is this a LAN, a MAN, or a WAN? Explain your reason. **[4 Marks]**	10 Marks
3	a.	Assume that you are working as a Network Administrator in XYZ Pvt Ltd. Your Manager has asked you to setup a laboratory with capacity of 60 machines. Elaborate all types of LAN topologies and suggest a suitable LAN topology with justification. **[7 Marks]**	10 Marks
	b.	A networking device is designed in such a way that, it forwards the packet out of every valid outgoing link. Identify the networking devices that helps to transfer data only to the respective destination. and highlight the drawbacks while the network is connected with more number of systems. **[3 Marks]**	

4		Assume a propagation speed of 2×10^8 m/s and a 2ms delay of a channel. Determine the length of a bit in a channel and the number of bits on a link if the channel bandwidth is as follows. i. 1 Mbps ii. 10 Mbps iii. 100 Mbps	10 Marks
5	a.	We measure the performance of a telephone line (4 KHz of bandwidth). When the signal is 10 V, the noise is 5 mV. Calculate the maximum data rate supported by this telephone line. **[5 Marks]**	10 Marks
	b.	A computer monitor has a resolution of 1200 by 1000 pixels. If each pixel uses 24 bits of 1024 colours, how many bits are needed to send the complete contents of a screen? **[5 Marks]**	

**********All the best **********