

NATIONAL OPEN UNIVERSITY

University Village, Plot 91, Cadastral Zone, Nnamdi Azikiwe Express Way, Jabi, Abuja

Faculty of Science and Technology

Course Title: PRINCIPLES OF COMMUNICATION TECHNOLOGY 3 Credit Unit

Course code: CIT303

Instruction: Answer Question 1 and any other four

1a.	With the aid of a suitably labelled sketch, LIST the FIVE(5) components th generic data communications system	at constitute a	
		(4marks)	
b.	List and briefly explain the different forms of data	(2 marks)	
C.	Explain briefly, the following modes of data communication: simplex, see duplex	mi-duplex, full	
		(2 marks)	
d.	What are point-to-point and point-to- multipoint connections in data co	mmunications? (2 marks)	
e.	Describe briefly, the FOUR(4) types of network topologies used in data c networks	ata communications	
		(2 marks)	
f.	Why are standards necessary in data communications?		
		(2 marks)	
g.	List and briefly explain the broad categories of standards in data commu	nications (2 marks)	
h.	Outline the layers that make up the OSI model?	(2 marks)	
i.	LIST the methods that enable the Media Access Control sub-layer to det	ermine where	

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(2 marks)

j.	explain briefly, the main function of the IP component of the TCP/IP protocol and lis main characteristics		
		(2 marks)	
	{ Total = 22 marks }		
2a.	Explain briefly, the concept of convolution	(4 marks)	
b.	State, in a mathematical form, the condition necessary for systems or sign transformed by Fourier transform	nals to be	
c.	LIST ANY TWO(2) applications of Digital Signal Processing(DSP)	(4 marks)	
		(4 marks)	
3a	 Describe briefly the following network types: Local Area Network(LAN) Meropolitan Area Netwok(MAN) Wide Area Network(WAN) 		
b.	What are the most common wireless LANs? Explain briefly, their areas of well as their advantages and disadvantages	(4 marks) application as (4 marks)	
C.	List the basic networking devices .	(4 marks)	
4a.	Distinguish between guided and unguided transmission media	(4 marks)	
b.	Describe the aid of a suitable sketch, the performance of optical fiber in t attenuation as a function of frequency	erms of	
c.	Explain, using a suitable illustration, the performance of coaxial cable in t attenuation as a function of frequency	(4 marks) erms of	
4a.	Define cryptography in the context of network security	(4 marks)	
b.	Describe the following cryptographic techniques: i. Symmetric-key cryptography	(2 marks)	
	ii. Asymmetric-key cryptography		

(2 marks)

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5a.	LIST and, briefly describe the main transmission impairments	
b.	What is the performance metric used in evaluating the performance of tr	
	57510115:	(4 marks)
6a.	Define a network operating system(NOS) and state its function(s)	(4 marks)
b.	Compare a computer with NOS and one without NOS	(4 marks)
C.	Distinguish between peer-peer and client-server network configurations	(4 marks)
7a.	 Write short but pertinent notes on the following switching techniques: Circuit switching Packet switching 	
		(4 marks)
b.	Describe, briefly, the time-division switching technique	(4 marks)
с.	Design a three-stage, 200 x 200 switch(N =200) with k = 4, n = 20. Use criterion	
		(4 marks)