

**NATIONAL OPEN UNIVERSITY OF NIGERIA**

**University Village, Plot 91, Cadastral Zone, NnamdiAzikiwe Express Way, Jabi, Abuja**

**Faculty of Sciences**

July 2017

**Course Code: CIT 303 Course Unit: 3**

**Course Title: Principles of Communication Technology**

**Instruction: Answer Question One and Any Four Other Questions**

**Time allowed: 2 1/2 hrs**

1a. Define the term ‘Data Communication’ 2 marks

b. Outline and discuss four components of data communication. 6 marks

c. Mention 4 different forms in which data is represented today 4 marks

d. Define the following terms

i. Cipher ii. Key 4 marks

e. list and explain three causes of transmission impairment. 6 marks

2a. Enumeratethree major criteria that a networkmust be able to meet 3 marks

b. With the aid of a well labeled diagram write a short note on the following possible connection types

i. Point-to-Point

ii. Multipoint 4 marks

c. Explain what is meant by the physical topology of a network 3 marks

d. List the key elements of a protocol. 2 marks

3a. Describe the OSI model 4 marks

b. State the role of the Session Layer of the OSI model 3 marks

c. Enumerate the five layers of the TCP/IP model 5 marks

4a. Explain why the TCP/IP is the most widely used protocol in the world. 3 marks

b. Define the following terms

i. LAN

ii. WAN

iii. Router

iv. Hub

v. Firewall

vi. Modem 6 marks

c. Write a short note on the technical barriers in VOIP 3 marks

5a. Give two major disadvantage of the bus topology 3 marks

b. Distinguish between guided media and unguided media. 3 marks

c. Explain four characteristics that determine the effectiveness of a data communications system 6 marks

6a. Differentiate between the following

1. A computer with a NOS and one without an NOS
2. Peer-to-Peer and Client/Server networks

4 marks

b. Define the following modes of data communication between two devices

i. Simplex ii. Half-Duplex iii. Duplex 3 marks

c. Use the Caesar cipher with the key = 9 to encrypt the message “NOUN” 2 marks

d. Enumerate the five services provided by Network Security 3 marks