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
        i.   A computer with a NOS and one without an NOS
        ii.   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