



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91 CADASTRAL ZONE, NNAMDI AZIKWE EXPRESSWAY, JABI, ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF COMPUTER SCIENCE
OCTOBER, 2019 EXAMINATIONS

COURSE CODE: CIT305

COURSE CREDIT: 3

COURSE TITLE: NETWORKING AND COMMUNICATION TECHNOLOGY

TIME ALLOWED: 2¹/₂ HOURS

INSTRUCTION: ANSWER QUESTION ONE (1) AND ANY OTHER (4) QUESTIONS

QUESTION ONE

1a. A common model in Networking and Communication Technology, is the Open System Interconnection (OSI) model. Produce a table of the OSI model from the topmost layer the bottom layer, depicting each of the following:

- i. The number of each layer (3 ¹/₂ marks)
- ii. The name of each layer (3 ¹/₂ marks)
- iii. The main function of each layer (7 marks)

(14 marks)

1b. Demonstrate the application of multiplexing within the following contexts:

- i. Telephony (2 marks)
- ii. Video processing (2 marks)
- iii. Digital broadcasting (2 marks)

(6 marks)

1c. Establish a clear distinction between a digital system and a non-digital system
(2 marks)

[Total = 22 marks]

QUESTION TWO

2a. Name and briefly discuss the three (3) common forms of transmission impairment in digital signals.
(6 marks)

2b. Generally, the **Integrated Services Digital Network' (ISDN)** Standards define three basic types of channels. Identify and give a brief explanation of these channels.

(6 marks)

[Total = 12 marks]

QUESTION THREE

3. Efficient network security is required for corporations, universities, schools, public libraries, internet cafes and other applications where administrator has to secure and maintain a lot of network workstations located in different places. Outline and briefly deliberate on any six (6) strategies for ensuring efficient network security.

(12 marks)

QUESTION FOUR

4a. Write short notes on the following:

- i. GSM and GPRS
- ii. Power Over Ethernet(POE)) *2 marks each; 2 x 3 = 6 marks*
- iii. Radio Modems

4b. Give a brief explanation of the following :

- i. Space Division Multiplexing
- ii. Time **Division Multiplexing**
- iii. Code **Division Multiplexing**) *2 marks each; 2 x 3 = 6 marks*
[Total = 12 marks]

QUESTION FIVE

5a. Synchronous Optical Networking also known as SONET, establishes the end-to-end connection as being composed of three (3) different equipment layers. State and briefly illustrate the role of each of these equipment layers. (9 marks)

5b. The *TCP/IP* protocol suite has two sets of protocols at the internet layer, Write down and designate the main purpose of these two sets of protocols(3 marks)
[Total = 12 marks]

QUESTION SIX

6a. All digital information possess common properties that distinguish them from analog communications methods. Write down and analyse any four (4) of these properties (8 marks)

6b. Write a short note on the concept of "Packet Switching" (4 marks)
[Total = 12 marks]