



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI-ABUJA**  
**FACULTY OF COMPUTING**  
**DEPARTMENT OF COMPUTER SCIENCE**  
**2025\_2 EXAMINATIONS\_**

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**COURSE CODE: CIT305**

**COURSE TITLE: NETWORKING AND COMMUNICATION TECHNOLOGY COURSE CREDIT: 3 UNITS**

**TIME ALLOWED: 3 HOURS**

**INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER THREE (3) QUESTIONS**

**Question 1: (25 marks)**

- a. In a tabula form, explain the OSI model from the topmost layer to the bottom layer, depicting each of the following:
- i. The number of each layer (7 marks)
  - ii. The name of each layer (7 marks)
  - iii. The main function of each layer (7 marks)
- b. Explain the application of multiplexing within the following contexts:
- i. Telephony (2 marks)
  - ii. Video processing (2 marks)

**Question 2:**

- 2a. Write short notes on the following types of IP networks classes: (6 marks)  
(i) Class *A* (ii) Class *B* Class *C*
- 2b. Differentiate between interior routers and exterior routers as used in IP environment (3marks)
- 2c. Outline and discuss any three of the five wireless technologies in use (6 marks)

**Question3:**

- a. Briefly describe Infrared communication as used in wireless technologies (3 marks)
- (ii) Differentiate between Intranets and extranets (3 marks)
  - (iii) State any four predefined enterprise networks are created upon installation (2 marks)
- b. (i) State four most common network protocols in data communication (2 marks)
- (ii) *IEEE* 802 splits the *OSI* data link layer into two sub-layers. List these layers (2 marks)
  - (iii) State any six *typical project business requirements* used for effective network planning and design (3 marks)

**Question 4**

- 4a. What is the aim of digital modulation? (3 marks)
- (ii) List any four components of ISDN as defined by ITU standards (4 marks)
  - (iii) State any four predefined enterprise networks are created upon installation (2 marks)
  - (iv) *IEEE* 802 splits the *OSI* data link layer into two sub-layers. List these layers (2 marks)
  - (v) Identify the four sources of transmission impairment. (4 marks)

**Question 5**

Write short notes on the following key strategies for ensuring efficient network security in data communication:

- (a) Prevent unknown applications (3 marks)
- (b) Use security applications from reliable vendors (3 marks)
- (c) Establish effective configuration management processes (3 marks)
- (d) All connections to the network must be known (3 marks)
- (e) What do you understand by Residual Networks? (3 marks)

**Question 6**

- (i) Write short notes on the following common types of threats- that affect enterprise network when connect to the internet: (6 marks)
  - (i) Insider threats (ii) Malware (iii) Socially engineered attacks
- (ii) Briefly describe the activities carried out in Business requirements as a step to Effective Network Planning and Design (6 marks)
- (iii) Which IP address is part of a residual network? (3 marks)