



**CRAWFORD UNIVERSITY, FAITH CITY IGBESA  
COLLEGE OF NATURAL AND APPLIED SCIENCES  
DEPARTMENT OF COMPUTER AND MATHEMATICAL SCIENCES**

**RAIN SEMESTER**

**SESSION: 2021/2022**

**COURSE CODE: ICT 416**

**TITLE: TELECOMMUNICATION SYSTEM**

**UNITS: 3**

**DURATION: 2.5 HOURS**

**INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER THREE**

**QUESTION ONE (24 marks)**

- (A) (i) Define Telecommunication (2mrks)  
(ii) Discuss the major components of a typical telecommunication system (4mrks)  
(iii) Briefly discuss GSM and identify the features that account for its popularity and wide acceptance (4mrks)  
(iv) Briefly discuss any 5 features of the New Public Network (5mrks)
- (B) Briefly discuss the following telecommunications concepts:  
(i) VPN (4mrks)  
(ii) Multiple Access Techniques (5mrks)

**QUESTION TWO (12marks)**

- (A) (i) The OSI reference model has seven layers, each having its own well-defined function. Discuss the model briefly (3mrks)  
(ii) Differentiate between PDH and SDH/SONET (3mrks)
- (B) Write short notes on the following:  
• Local Multipoint Distribution Services (LMDS) (3mrks)  
• Multichannel Multipoint Distribution System (MMDS)(3mrks)

**QUESTION THREE (12marks)**

- (A) Discuss the following Microwave System design parameters (obtaining expressions where necessary):  
(i) Received Signal Level (RSL) (2mrks)  
(ii) Receiver Sensitivity Threshold ( $R_x$ ) (2mrks)  
(iii) Link Feasibility (2mrks)
- (B) Highlight two strengths and weaknesses each of the following telecommunication media:  
(i) Coaxial cable (2mrks)  
(ii) Fibre-optics (2mrks)  
(iii) Satellite (2mrks)

**QUESTION FOUR (12marks)**

- (A) (i) Support for Quality of Service (QoS) remains a core issue in telecommunication. Discuss any four QoS parameters (4mrks)  
(iv) Briefly discuss the components needed for QoS (4mrks)
- (B) Discuss ATM QoS categories (4mrks)

**QUESTION FIVE (12marks)**

- (A) (i) Diagrammatically describe the GSM network Architecture (4mrks)  
(ii) Discuss briefly the subsystems of the GSM Architecture (5mrks)
- (B) Briefly discuss the following telecommunication elements: (3mrks)  
(i) Circuit  
(ii) Channel  
(iii) Trunk

**QUESTION SIX (12marks)**

- (A) Differentiate between the following:  
(i) X.25 and Frame Relay (4mrks)  
(ii) Packet-switched and Cell-switched Networks (3mrks)
- (B) (i) Define Protocols and Standards in telecommunication (2mrks)  
(ii) What do you understand by Protocol Layering and Encapsulation? (3mrks)