



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF ENGINEERING

DEPARTMENT OF ELECTRONIC ENGINEERING

EEE 5225 MOBILE COMMUNICATIONS

March 2025 Examination Paper

This examination paper consists of 2 pages

Time Allowed: 3 hours

Total Marks: 100

Examiner's Name: Engineer Magripa Nleya

INSTRUCTIONS

1. Answer any five (5) questions only
2. All necessary diagrams should be drawn clearly.
3. Each question carries 20 marks

MARK ALLOCATION

QUESTION	MARKS
1.	20
2.	20
3.	20
4.	20
5.	20
TOTAL	100

QUESTION 1

Explain in full details an S1 and an X2 handover in LTE network with the aid of appropriate diagrams. [20 marks]

QUESTION 2

- A. How does a mobile device get access to the Physical Uplink Shared Channel? [10 marks]
- B. What are the differences between ARQ and HARQ? [10 marks]

QUESTION 3

- A. What is the difference between a default and a dedicated bearer? [12 marks]
- B. What is the purpose of DRX in RRC Connected state? [8 marks]

QUESTION 4

Name the major IMS network components and give a short description of their functions. [20 marks]

QUESTION 5

Describe the main steps in handing over an ongoing VoLTE call to Wi-Fi. [20 marks]

QUESTION 6

Which security holes exist in the WEP procedures and how are they solved by WPA and WPA2 (802.1x)? [20 marks]

QUESTION 7

Explain the differences between the TDD and FDD 5G air interface. [20 marks]

QUESTION 8

Explain the concept of the service oriented architecture for the 5G core network. [20 marks]

End of the examination paper