



KENYATTA UNIVERSITY
EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE (COMPUTER
SCIENCE)

SCO 412: MOBILE COMPUTING AND WIRELESS TECHNOLOGY

1ST SEMESTER 2025/2026

TIME: 2 HOURS

INSTRUCTIONS: Answer question One and any other Two Questions.

Question one is compulsory and carries 30 marks. The remaining questions carry 20 marks.

Question one

- a) Distinguish mobile computing vs. wireless networking. (2 marks)
- b) Describe the function of presentation, application and data tier of mobile environment. (6 marks)
- c) Explain the structure of Mobile Computing Application. (4 marks)
- d) Outline FOUR principle responsibilities of the MAC Protocol? (4 marks)
- e) Differentiate between Traditional IP and mobile IP. (2 marks)
- f) Develop a solution to reduce the congestion in a mobile network. (4 marks)
- g) Show the characteristics of 4G and 5G Cellular Networks. (4 marks)
- h) Describe the function of HLR and VLR. (4 marks)

Question two

- a) List out the different interfaces present in GSM? (3 marks)
- b) Illustrate how a GSM network provides security to the customers. (6 marks)
- c) List out the 3 different subsystems of GSM. (3 marks)
- d) Name the 3 Tele Services provided by GSM. (3 marks)
- e) Define Handoff. What are its types? (5 marks)

Question 3

- a) List and explain three important features of GSM security. (3 marks)
- b) Explain in detail about the system architecture of GSM. (7 marks)
- c) Differentiate between Traditional IP and Mobile IP. (2 marks)
- d) Illustrate the FOUR types of handover available in GSM? (4 marks)
- e) List the four types of information in SIM. (4 marks)

Question 4

- a) Outline Four categories of fixed assignment MAC. (4 marks)
- b) Explain why the traditional IP cannot be used in a mobile network. What are the main differences between the traditional IP and the mobile IP? How does mobile IP support mobile hubs? (4 marks)
- c) Explain in detail about Multiplexing techniques in Mobile Computing. (8 marks)
- d) Explain the distinguishing features of various generations of wireless networks. (4 marks)

Question 5

- a) Outline the main problems of signal propagation? Why do radio waves not always follow a straight line? Why is reflection both useful and harmful. (5 marks)
- b) Distinguish between 3G and 4G cellular networks. (2 marks)
- c) Explain the channels in GSM. (10 marks)
- d) Analyse 3 challenges in Wireless Communication. (3 marks)