CHUKA   UNIVERSITY

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF
SCIENCE IN COMPUTER SCIENCE

COSC 362: WIRELESS AND MOBILE COMPUTING

STREAMS: BSC. COMPUTER SCIENCE Y3S2

INSTRUCTIONS
- Attempt question ONE (Section A) and any other TWO from SECTION B
- Marks are awarded for clear and concise answers
- ONLY the first THREE Questions attempted will be marked (Question one inclusive)

SECTION A-Compulsory

QUESTION ONE (30 MARKS)

a. Differentiate between
   (i)   Mobile computing and wireless networks   [2marks]
   (ii) Ubiquitous computing and pervasive computing   [2 marks]
   (iii) Bluetooth and Personal Area networks.   [2 marks]
b. Explain four features of mobile computing   [4 marks]
c. Explain four factors that influence the entire handoff process [4 marks]
d. Explain the difference between wireless and fixed networks.   [4 marks]
e. Explain the factors to consider while designing a wireless network in mobile computing.

[4marks]

f. Wireless technologies have a big impact on component development for emerging products
   and applications. Explain four current trends in wireless technology   [8 marks]

SECTION B

Question Two (20 marks)

a) Explain the concept of hard off with the help of a diagram   [6marks]
b) Explain three types of handoff algorithms   [6marks]
c) With the aid of a diagram explain the main components of a basic cellular system

architecture.   [8 marks]

Question Three (20 marks)

a) Explain the concept of Frequency Reuse   [6 marks]

b) Explain three types of multiple access in wireless networks   [6 marks]

c) Explain four important mutli-hop wireless network routing protocols [8 marks]

Question Four (20 marks)

The wireless communication technologies have evolved from the first to fourth generation and are moving towards to fifth Generation (5G).]

a) Explain four challenges of next generation wireless networks [4marks]

b) Explain four applications of next generation wireless networks [4marks]

c) Discuss the properties of each generation. [12 marks]

Question Five (20 marks)

a) Explain the following terms

   (i)   ISDN [2marks]

   (ii)   Advanced intelligent networks [2marks]

   (iii)   Signaling [2marks]

b) With the deployment of wireless LAN in almost any type of environment, the risks of attacks occurring on wireless network goes up. Explain three common wireless threats and their mitigations [6marks]

c) Discuss the concepts of *cell splitting*. [8marks]