CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

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

COSC362: WIRELESS AND MOBILE COMPUTING

STREAMS: BSC. COMPUTER SCIENCE (Y3S2)   **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 14/07/2021   **2.30 P.M. – 4.30 P.M.**

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]

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