JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN SECURITY AND FORENICS

3RD YEAR 2ND SEMESTER 2020/2021 ACADEMIC YEAR

MAIN CAMPUS

(SUPPLEMENTARY/SPECIAL EXAMINATION)

COURSE CODE: IIT 3324

COURSE TITLE: WIRELESS NETWORKS AND MOBILE COMPUTING

EXAM VENUE: **STREAM:**

DATE: **EXAM SESSION:**

TIME: 2.00 HOURS

INSTRUCTIONS:

1. **Answer Question 1 (Compulsory) and ANY other two questions**
2. **Candidates are advised not to write on the question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

QUESTION 1 [30 MARKS]

a. A network administrator is designing the layout of a new wireless network. Which three areas of concern should be accounted for when building a wireless network? **(3marks)**

b. A network administrator is required to upgrade wireless access to end users in a building. To provide data rates up to 1.3 Gb/s and still be backward compatible with older devices, which wireless standard should be implemented explain your answer? **(2marks)**

c. Which characteristic describes crosstalk and how can it be rectified? **(2marks)**

d. What is indicated by the term throughput, explain two factors that can affect through put?

(4 marks)

e. Sate the two primary vulnerabilities are in the areas of open system authentication.**(2marks)**

f. Does configuring an access point to not allow the beacon frame to include the SSID provide security? Explain your answer **(2marks)**

g. MAC address filtering is considered a better protection mechanism in wireless in comparison to other methods of protecting a wireless network. Explain how MAC filtering provides security **(2marsk)**

h. The wireless security requirements for personal wireless security are most often based on two models promoted by the Wi-Fi Alliance state them **(2marks)**

i. TKIP has several advantages over WEP state at least three: **(3marks)**

j. What do you understand by ad hoc and infrastructure wireless network topologies **(2marks)**

k. State the two access methods that GSM uses **(2marks)**

QUESTION 2 [20 MARKS]

a. In network data transmissions, many factors prevent the actual speeds from reaching this end-to-end Theoretical maximum. Explain at least four factors to support this **(8marks)**

b. A GSM network consists of several functional entities, whose functions and interfaces are defined. State the four broad parts the form the GSM **(4marks)**

c. Explain what is meant by quality of service is high and quality of service is low and which one between the two is considered good in a GSM network **(3marks)**

d. Briefly Explain at least five advantages associated with GSM network **(5marks)**

QUESTION 3 [20 MARKS]

a) Wireless interference though inevitable is an important consideration when you plan a wireless Network. State and explain at least four factors that cause interference **(8marks)**

b) When designing wireless LAN how would you ensure that a mobile wireless client will not lose connectivity when moving from one access point to another? **(2marks)**

c) Distinguish between spread spectrum and narrow band technology **(2marks)**

d) Access Point is limited by a transmission range support your answer with at least two factors **(2marks)**

e) You are faced with a problem in which client systems cannot consistently access the AP, you could try moving the access point to better cover the area, but then you may disrupt access for users in other areas. Briefly explain at least four things that you can do to troubleshoot AP coverage? **(4 marks)**

f) State at least two function of the Operation Support Subsystem(OSS) **(2marks)**

QUESTION 4 [20 MARKS]

a) Briefly explain three weakness associated with MAC address filtering **(6marks)**

b) Explain how can a network manager secure a wireless network? **(6marks)**

c) Describe what you understand by the following GSM network areas: **(4 marks)**
   I. Cell:
   II. Location Area:

d) Why would you prefer a switch over a hub **(2marks)**

e) Distinguish between Basic Service Set (BSS) and Extended Service Set (ESS) **(2marks)**

   I. Basic Service Set (BSS)

   II. Extended Service Set (ESS)

QUESTION 5 [20 MARKS]

a) Briefly explain the three roles attributed to the Wireless Ethernet Compatibility Alliance (WECA) **(6marks)**

b) Distinguish between omnidirectional and Yagi antennas (**10marks)**

c) State at least two function of the Operation Support Subsystem(OSS) **(2marks)**

d) In a home network scenario why constant beacon information is unnecessary. How would you deal with it? **(2marks)**