



**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**

**3<sup>RD</sup>YEAR 2<sup>ND</sup> SEMESTER 2016/2017 ACADEMIC YEAR**

**MAIN CAMPUS**

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**COURSE CODE: IIT 3324**

**COURSE TITLE: WIRELESS NETWORKS AND MOBILE COMPUTING**

**EXAM VENUE:** **STREAM: BSc Computer Security and  
forensics**

**DATE: April 2017** **EXAM SESSION:**

**TIME: 2.00 HOURS**

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**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) The frequency 5 GHz is synonymous to which wireless networking standards? **(1marks)**
- b) Your organization uses 802.11n wireless access points to provide wireless connectivity to your network. You own an old laptop integrated with 802.11b wireless network adapter. What must you do to connect this device to the network? **(2marks)**
- c) With clear distinction explain what you understand by the terms data rate and throughput **(4marks)**
- d) Explain the important role Beacons plays within wireless networks **(2 marks)**
- e) State and explain the two methods of Access Point discovery **(4marks)**
- f) Describe what you understand by the following GSM terms : **(4 marks)**
- i. **Cell:**
  - ii. **Location Area:**
  - iii. **MSC/VLR Service Area:**
  - iv. **PLMN:**
- g) State and explain the two critical parts that make up the BSS **(4marks)**
- h) 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)**
- i) 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? **(4marks)**
- j) Access Point is limited by a transmission range support your answer with at least two factors **(2marks)**

### **Question 2 [20 marks]**

- a) 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)**
- b) Briefly explain three weakness associated with MAC address filtering **(6marks)**
- c) Distinguish between omnidirectional and Yagi antennas **(8marks)**
- d) Using the right antenna can save you money on networking costs explain **(2marks)**

### **Question 3 [20 marks]**

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

- b) Briefly explain the three roles attributed to the Wireless Ethernet Compatibility Alliance (WECA) **(6marks)**
- c) You have discovered that the signal from your wireless network is emanating some distance out into the parking lot of your facility. What three things can you do to stop this? **(3marks)**
- d) Your wireless network that has a weak signal, what can you do a to help increase the signal's power **(5marks)**

#### **Question 4 [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) What do you understand by the term transceiver **(2mark)**
- c) State three things that make up an access point (AP) **(3marks)**
- d) 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)**
- e) Which characteristic describes crosstalk and how can it be rectified? **(2marks)**
- f) Sate the two primary vulnerabilities are in the areas of open system authentication. **(2marks)**

#### **Question 5 [20 marks]**

- a) You are contracted to deploy a new wireless network for Jooust. What four things should you do to ensure that the network is as secure as much possible? **(4marks)**
- b) State at least four functions of the Operation Support Subsystem (OSS) **(4marks)**
- c) Explain at least five advantages associated with GSM network **(10marks)**
- d) A wireless access point can operate as bridge and as well as a router explain **(2marks)**