



SCHOOL OF COMPUTING AND ENGINEERING SCIENCES
BACHELOR OF SCIENCE IN COMPUTER NETWORKS AND SECURITY
CNS 3204: Wireless and Mobile Security
END OF SEMESTER EXAM

Date: 15th December 2022

Time: 2 Hours

Instructions:

This Examination consists of **FOUR** questions

Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

Question One [30 Marks]

- a. State the technologies that apply the following IEEE standards: (3 marks)
 - i. IEEE 802.15
 - ii. IEEE 802.16
 - iii. IEEE 802.11
- b. Explain why wireless networks are more vulnerable compared to wired networks (3 marks)
- c. Explain the following attacks against a wireless network: (6 marks)
 - i. TCP attack
 - ii. Denial of service attack
 - iii. Dictionary attack
- d. Explain two security modes in Bluetooth (4 marks)
- e. WEP was the first-generation security standard for WiFi. Describe two weaknesses of WEP. (4 marks)
- f. Discuss three security vulnerabilities of a 2G network. (6 marks)
- g. Smart homes are becoming. Explain two possible attacks to a smart home. (4 marks)

Question Two [15 Marks] – WiMax and Bluetooth

- a) Explain three threats to a WiMax network and their countermeasures (6 marks)
- b) Explain two possible attacks to a Bluetooth network (4 marks)
- c) Use the Figure Q2(c) to explain how mutual authentication happens between two Bluetooth devices. (5 marks)

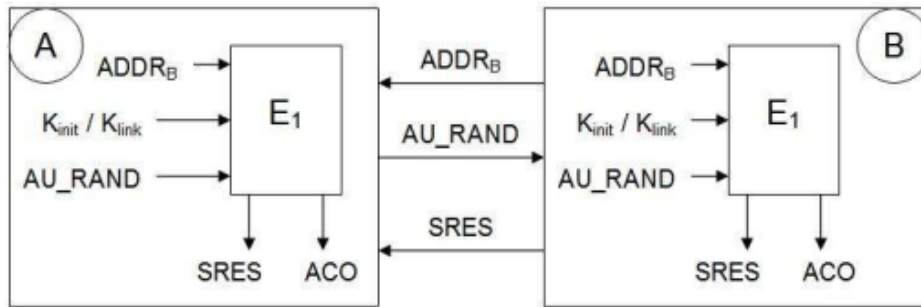


Figure 2(c)

Question Three [15 Marks]

- a. Distinguish between the following (4 marks)
 - i. WPA-PSK and WPS Enterprise
 - ii. WPA2 and WPA
- b. Explain two vulnerabilities that are unique to WiFi (4 marks)
- c. Explain the importance of IEEE 802.11x in a WiFi network. (3 marks)
- d. Explain the following protocols as applied to IEEE 802.11i. (4 marks)
 - i. TKIP
 - ii. CCMP

Question Four [15 Marks]

- a) Explain the following is achieved in a GSM/GPRS network: (9 marks)
 - a. Subscriber identity protection.
 - b. Access control
 - c. Encryption of radio communication
- b) Describe two vulnerabilities that can be in 5G network and not those generations before it. (6 marks)

Question Five [15 Marks]

- a) Explain three security issues unique to a Mobile Ad Hoc Network and their solutions(9 marks)
- b) Explain the measures that can be taken to ensure that IoT networks are secure. (6 marks)