



FACULTY OF SCIENCE

ACADEMY FOR COMPUTER SCIENCE AND SOFTWARE ENGINEERING

MODULE **IT00147 - NETWORK INFORMATION SECURITY**

CAMPUS **APK**

EXAM **JANUARY 2017**

DATE: JANUARY 2017

SESSION 08:30 – 10:30

ASSESSOR(S)

PROF M COETZEE

EXTERNAL MODERATOR

DR L DREVIN (NWU)

DURATION 2 HOURS

MARKS 80

NUMBER OF PAGES: 2 PAGES

INSTRUCTIONS: **Answer all the questions.**

QUESTION 1

Discuss WLAN authentication. Your answer should address authentication from the most basic non-secure authentication configuration, up to and including the most secure form of authentication. *Structure your answer carefully.*

[20]**QUESTION 2**

Explain CCMP (Counter Cipher Mode with Block Chaining Message Authentication Code Protocol). *Specifically refer to how it addresses confidentiality, authentication and integrity.*

[10]**QUESTION 3**

Explain the difference between WPA and WPA2 – Personal with respect to how the PSK (pre-shared key) is defined and managed. Are any risks introduced in the home environment? Discuss.

[10]**QUESTION 4**

The 802.11i amendment, which is now part of the 802.11 - 2007 standard, fully defines robust security network association (RSNA) where the access point and each client radio has a unique dynamic key that is shared between the client radio and the access point radio. *Explain the process by which the access point and each client radio are provided with a unique dynamic key.*

[10]**QUESTION 5**

The majority of the WLAN controller vendors offers a fast secure roaming solution that is an enhancement of PMK caching called *opportunistic key caching (OKC)*. *Explain what secure roaming is and how this solution works.*

[10]**QUESTION 6**

a) What is a rogue access point and why does it pose a high risk to an organisation? **(3)**

b) Once a client station or access point has been classified as a rogue device, a WIPS (Wireless Intrusion Prevention System) can effectively mitigate the attack. *Explain how this is done.*

(7)**[10]****QUESTION 7**

Name and discuss the peer to peer, mutual authentication process defined for 802.11s mesh networks.

[10]