UNIVERSITY OF PROFESSIONAL STUDIES, ACCRA (UPSA)

DEGREE PROGRAMME

REGULAR SCHOOL

END OF SECOND SEMESTER EXAMINATIONS- 2021 ACADEMIC YEAR

FACULTY OF INFORMATION TECHNOLOGY AND COMMUNICATION STUDIES

DEPARTMENT OF IT STUDIES

LEVEL 400

BITM406:   COMPUTER AND NETWORK SECURITY

Date:

ANSWER ALL QUESTIONS

Q1 a) Most modern infrastructures have underlying security protocol tools provided by cryptographic algorithms. Choosing a preferable algorithm is dependent on what is to be accomplished, such as encryption or data integrity. There are two categories to the preferred algorithms namely; symmetric key and asymmetric key cryptography. Elaborate of the strengths and weaknesses of both algorithms and give an example of where they are used.   [10 marks]

b) You receive the following email from a subscribed online platform:

Dear User, we will be deleting all inactive email accounts in order to create space for more users by 15th August 2021. The following information are required to be sent in order to continue using your email account. If we do not receive this information from you by date stated, your email account will be closed.

*Name (first and last):

*Email User Login:

*Password:

*Date of birth:

*Alternate email:

Please contact the Webmail Team with any questions. Thank you for your immediate attention.

Is there a problem with this email? Explain.   [10 marks]

Q2. a) Due to the recent COVID-19 pandemic employees are increasingly connecting to company networks remotely via mobile devices such as laptops, tablets and smartphones. Remote access needs to satisfy five essential requirements to be efficient and secure. Identify and briefly explain each of these FIVE (5) requirements.   [10 marks]

b) You just received the following messages

i. Plaintext: CRYPTOGRAPHY   [5 marks]
   key: KEY

ii. Plaintext: TO BE OR NOT TO BE   [5 marks]
    key: CODE

Encrypt using the Vigenère cipher and Show your work for partial credit.

Q3 a) Biometric technology has been available for a number of years; however, its adoption has been slow. Discuss the factor(s) that you see as inhibiting or delaying the adoption of biometric technologies. Also include in your answer any factor(s) that might increase the adoption of biometrics. [10 marks]

b) UPSA IT club is organizing a session with fresh students and as part of the schedule are to

i.   Explain what is meant by the term encryption and briefly discuss why it is used in computer security. [5 marks]

ii.   Also, encryption uses an algorithm and a key. Explain the role of a key and outline why the size of the key is important in the encryption process. [5 marks]