Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2022/2023

COURSE NAME	:	FUNDAMENTALS OF INFORMATION SECURITY
COURSE CODE	:	BIT 21403
PROGRAMME CODE	:	BIT
EXAMINATION DATE	:	JULY / AUGUST 2023
DURATION	:	3 HOURS
INSTRUCTION	:	1. ANSWER **ALL** QUESTIONS. 2. THIS FINAL EXAMINATION IS CONDUCTED ONLINE AND **CLOSED BOOK** . 3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK.

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

Q1 Consider the following scenario:

In 2013, Target Corporation, a large retail company in the United States, suffered a major data breach that exposed the personal information of over 40 million customers. The attackers used a social engineering technique known as "spear phishing" to gain access to Target's network.

The attackers sent emails to Target employees that appeared to be from a trusted partner company. The emails contained a link that, when clicked, installed malware on the employee's computer. The malware gave the attackers access to Target's network, where they were able to steal the credit card information and personal data of millions of customers.

The attackers used a combination of technical and social engineering techniques to carry out the attack.

(a) Define social engineering activities.

(2 marks)

(b) Explain **THREE (3)** common social engineering methods that can be used by attackers.

(9 marks)

(c) Identify which social engineering method was applied in Target case.

(1 mark)

(d) Justify your answer in **Q1(c)**.

(3 marks)

Q2 (a) Explain **FIVE (5)** elements of a symmetric encryption based on **Figure Q2(a)**.

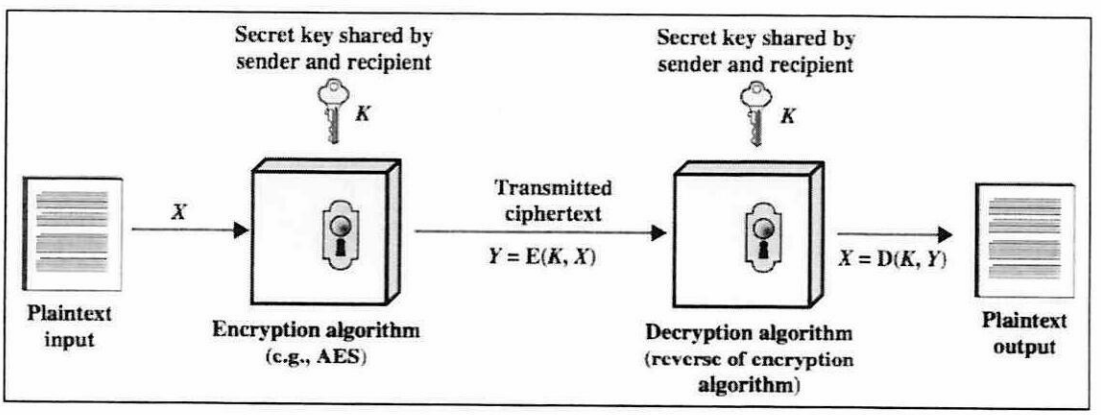

Figure Q2(a)

(10 marks)

(b) Discuss **THREE (3)** limitations of digital signature in information security.

(6 marks)

Q3 Based on the following scenario:

PRamlee Photography is a leading provider of high-quality images for commercial use. In order to protect its digital assets from unauthorized use and distribution, PRamlee Photography has implemented digital watermarking on all images available on its platform.

Recently, the company noticed that some of its images were being used without permission on other websites and social media platforms. After investigating the issue, they discovered that a group of hackers had intentionally attacked their digital watermarking system.

The hackers were able to bypass the company's security measures and alter the digital watermarks on the images, making it difficult for the company to identify and pursue the unauthorized use of their images. As a result, PRamlee Photography suffered significant financial losses due to the unauthorized use of its images.

(a) Describe the concept of intentional attacks on digital watermarks.

(1 mark)

(b) Explain **THREE (3)** methods the hackers can use to attack PRamlee Photography digital watermarks.

(6 marks)

(c) Discuss **FOUR (4)** mitigation measures that can be taken by PRamlee Photography to overcome problems in **Q3(b)**.

(8 marks)

Q4 (a) Explain how blind signature can be used in e-commerce private payment schemes.

(3 marks)

(b) Discuss **THREE (3)** security issues related to online payment systems in e-commerce.

(6 marks)

(c) Discuss **THREE (3)** methods to increase the security of electronic wallets.

(6 marks)

Q5 Based on the following scenario:

KPJ Batu Pahat Hospital is migrating their patient records to a new database system. Assume you are the database security administrator, you need to ensure the migrating process is secure, especially from SQL injection attacks.

(a) Describe SQL injection (SQLi) attacks.

(1 mark)

(b) Discuss **FOUR (4)** potential SQLi attack avenues to the KPJ new database system.

(8 marks)

(c) Propose **THREE (3)** SQLi countermeasure types to the KPJ new database system.

(6 marks)

Q6 (a) (i) Discuss **THREE (3)** types of computer crimes.

(6 marks)

(ii) Provide **ONE (1)** example of crime case for each of the computer crime in **Q6(a)(i).**

(3 marks)

(b) Discuss **THREE (3)** types of patents.

(6 marks)

-END OF QUESTIONS –