External assessment 2025

Multiple choice question book

Digital Solutions

General instruction

- Work in this book will not be marked.

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Section 1

Instruction

- Respond to these questions in the question and response book.

QUESTION 1

Which statement about RSA encryption keys is true?

(A) The key sizes are small for better security.

(B) The keys are an example of symmetric encryption.

(C) A private key is used for both encryption and decryption.

(D) One key is used for encryption, and a second key is used for decryption.

QUESTION 2

What type of algorithm irreversibly takes a variable-length input and outputs a fixed-length string?

(A) hashing

(B) decryption

(C) encryption

(D) compression

QUESTION 3

When blocks of code reduce the complexity of a system, this is known as

(A) iteration.

(B) selection.

(C) sequencing.

(D) modularisation.

QUESTION 4

An unauthorised party gained access to video and audio recordings of various court hearings.
Which Australian Privacy Principle was breached?

(A) security of personal information

(B) use or disclosure of personal information

(C) collection of solicited personal information

(D) open and transparent management of personal information

QUESTION 5

In the context of network transmission, what is the primary function of FTP?

(A) rendering web pages in a browser

(B) transferring files between computers on a network

(C) encrypting data during transmission over a network

(D) acting as a protocol for real-time communication and messaging

QUESTION 6

A JSON string is shown.

```
{"song":"Butterfly", "duration":320, "band":"zerogarage"}
```

How many properties are defined by the string?

(A) 1

(B) 3

(C) 5

(D) 6

QUESTION 7

A Vigenère cipher has the keyword ‘BANANA’, a Gronsfeld cipher has the key number ‘123456’ and a Caesar cipher has the key number ‘7’.

Rank the encryption algorithms from least secure to most secure, based on their vulnerability to brute force attacks.

(A) Vigenère, Caesar, Gronsfeld

(B) Gronsfeld, Vigenère, Caesar

(C) Caesar, Gronsfeld, Vigenère

(D) Caesar, Vigenère, Gronsfeld

QUESTION 8

An encryption algorithm is shown.

```
0 BEGIN
1   INPUT plaintext
2   INPUT key
3     IF length of key < length of plaintext THEN
4       RETURN error // Key must be at least as long as the plaintext
5     ENDIF
6
7     ciphertext = ''
8     FOR each character in plaintext
9       Convert character and corresponding key character to binary
10      ciphertextCharacter = XOR(character, keyCharacter)
11      Convert ciphertextCharacter back to character
12      Append ciphertextCharacter to ciphertext
13    ENDFOR
14
15    RETURN ciphertext
16 END
```

What is the role of line 10 of the algorithm?

(A) encrypting each character of the plaintext

(B) ensuring that the ciphertext is longer than the plaintext

(C) generating a random key as long or longer than the plaintext

(D) converting each character of the plaintext into binary format

QUESTION 9

Which component of a digital solution is required for efficient data processing?

(A) secure login and authentication processes

(B) visually appealing interface design

(C) maintainable programming

(D) scalable database design

QUESTION 10

A user accidentally modifies critical data in a shared document. This is a compromise of data

(A) access.

(B) integrity.

(C) availability.

(D) confidentiality.

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