

BCS THE CHARTERED INSTITUTE FOR IT
BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT

COMPUTER AND NETWORK TECHNOLOGY

Monday 25th April 2022 – Morning

Time: TWO hours

Section A and Section B each carry 50% of the marks.
You are advised to spend about 1 hour on Section A (30 minutes per question)
and 1 hour on Section B (12 minutes per question)

Answer any Section A questions you attempt in Answer Book A
Answer any Section B questions you attempt in Answer Book B

The marks given in brackets are **indicative** of the weight given to each part of the question.

Calculators are **NOT** allowed in this examination.

Section A

Answer 2 questions (out of 4) in Answer Book A. Each question carries 30 marks.

A1.

Malware (Malicious Software) comes in many different forms including:

- i) Virus
- ii) Worm
- iii) Trojan Horse
- iv) Spyware.

a) Explain and distinguish between the **FOUR** different types of malware, describing their key characteristics and providing an example of each.

(16 marks)

b) Describe how malware can affect a system's reliability and performance.

(6 marks)

c) What trends in malware and computer security are likely to be the most concerning and have the greatest impact on businesses in terms of:

- i) damage to operational ability
- ii) loss of revenue
- iii) reputation.

(8 marks)

A2.

a) Explain and differentiate between physical, virtual, and logical memory.

(12 marks)

b) Why is main memory not suitable for permanent program storage or backup purposes?

(3 marks)

c) What is the main disadvantage to storing information on a magnetic disk drive as opposed to main memory?

(3 marks)

d) Explain why data fragments in memory and how both internal and external fragmentation can occur.

(12 marks)

A3.

a) List the **FIVE** main different states that a computer process can exist in at any given time and describe their main characteristics.

(15 marks)

b) Discuss the challenges that multicore systems present for multi-threaded programming.

(15 marks)

A4.

- a) Describe the **FOUR** main components that comprise a computer system. **(10 marks)**
- b) For server-based systems, explain a typical operation of these two server types and describe a typical application for each:
- i) Compute Server
 - ii) File Server.
- (8 marks)**
- c) For typical computer systems, there are modes of operation for the computer's operating system. Describe and compare the **TWO** modes of operation. **(12 marks)**

[Turn Over]

Section B

Answer 5 questions (out of 8) in Answer Book B. Each question carries 12 marks.

B5.

- a) Explain the purpose of the OSI model. (4 marks)
- b) Briefly describe each of the **SEVEN** layers of the OSI model. (8 marks)

B6.

- a) Describe the difference between a standalone and a networked printer. (6 marks)
- b) Describe the function of a laser printer. (6 marks)

B7.

Describe the function of each of the following:

- a) RAM (4 marks)
- b) Cache (4 marks)
- c) SSD. (4 marks)

B8.

- a) Convert the following from binary to decimal:
 - i) 11110011 (2 marks)
 - ii) 11001100 (2 marks)
 - iii) 00111111 (2 marks)
- b) Convert the following IP addresses from decimal to binary:
 - i) 192.168.0.1 (2 marks)
 - ii) 169.29.55.38 (2 marks)
 - iii) 168.45.8.11 (2 marks)

B9.

Describe **THREE** advantages and **THREE** disadvantages of the following technology:

- a) WiFi (6 marks)
- b) Broadband. (6 marks)

B10.

Explain each of the following terms:

- a) Bandwidth (4 marks)
- b) Latency (4 marks)
- c) Collision. (4 marks)

B11.

- a) Describe **THREE** common types of cyber-attack. (6 marks)
- b) Explain how the attacks could be prevented. (6 marks)

B12.

Explain each of the following terms with examples:

- a) Quad core processor (4 marks)
- b) Display resolution (4 marks)
- c) Hard drive capacity. (4 marks)

End of Examination