BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT

Computer and Network Technology

Tuesday 25th September 2018 – 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). Each question carries 30 marks.

A1

a) For decades, malware has been designed to interfere with the correct operation of a computer. Explain what malware is and discuss the threat presented by the three following examples of malware.

i) SPAM.
ii) Worm.
iii) Ransomware.

(20 marks)

b) You are in charge of computing, networks, and IT in a small company with 20 employees. The company uses PC-based networked computers and most of the employees have laptops solely for company business use. You are asked to create a list of rules for the employees designed to reduce the danger of being affected by malware.

Suggest **five** rules that the employees should abide by.

(10 marks)

A2

a) What is floating-point arithmetic and why do computers employ it? Your answer should discuss the nature of floating-point arithmetic and cover its advantages and disadvantages with respect to binary integer arithmetic.

(10 marks)

b) Convert the decimal number 1023.625 into floating-point form. You may either use the IEEE standard floating-point arithmetic format, or you may devise your own format. If you use your own format, you must define it.

(10 marks)

c) Briefly explain how two floating-point numbers are added together.

(10 marks)

A3

For decades, the principal form of secondary storage was the hard disk drive. Today, the hard disk drive is rapidly being replaced by the solid-state disk *(SSD)* in laptops, desktop computers and even data warehouses.

a) Explain the meaning of secondary storage and state how it differs from main storage (also called immediate access memory or RAM).

(10 marks)

b) Briefly describe the operation of the hard disk drive (HDD) and give its operational characteristics.

(10 marks)

c) Explain how the SSD differs from the HDD. Describe its operational characteristics and state why it is now preferred to the hard disk drive.

(10 marks)

A4

Communication systems are described in terms of layered protocols (e.g., ISO standard for open systems communication, or the TCP/IP protocol).

a) Communications systems are often described in terms of a layered protocol. What is a layered protocol and what are its advantages?

(10 marks)

b) Describe either the ISO protocol for OSI or the TCP/IP protocol.

(20 marks)

Section B

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

B5

Describe the purpose of each of the following storage mediums:

a) RAM. **(4 marks)**
b) ROM. **(4 marks)**
c) Cloud storage. **(4 marks)**

B6

Describe the following types of computer networks:

a) Intranet. **(6 marks)**
b) Extranet. **(6 marks)**

B7

Briefly describe each of these computer terms:

a) Motherboard. **(4 marks)**
b) ALU. **(4 marks)**
c) Clock rate. **(4 marks)**

B8

Describe the following Operating Systems related terms:

a) Application management. **(4 marks)**
b) I/O management. **(4 marks)**
c) Device driver. **(4 marks)**

B9

Compare and contrast the following output devices:

a) Laser printer. **(6 marks)**
b) Ink jet printer. **(6 marks)**

B10

a) Describe FOUR factors to consider when choosing between a desktop and a laptop computer. **(8 marks)**
b) Explain typical uses of a laptop computer. **(4 marks)**

Turn over

B11

Explain the meaning and use of the following terms as applied to network connectivity:

a) WEP. **(3 marks)**
b) HTTPs. **(3 marks)**
c) MAC address. **(3 marks)**
d) 802.11 standard. **(3 marks)**

B12

Describe the purpose and operation of each of the following:

a) AND gate. **(3 marks)**
b) OR gate. **(3 marks)**
c) EXOR gate (sometimes called EOR or XOR gate). **(3 marks)**
d) NOT gate. **(3 marks)**