



# **Introduction to Computer Science**

**14 June 2023**

## **Examination Paper**

**Answer ALL questions.**

**Clearly cross out surplus answers.**

**Time: 2 hours**

**The maximum mark for this paper is 50.**

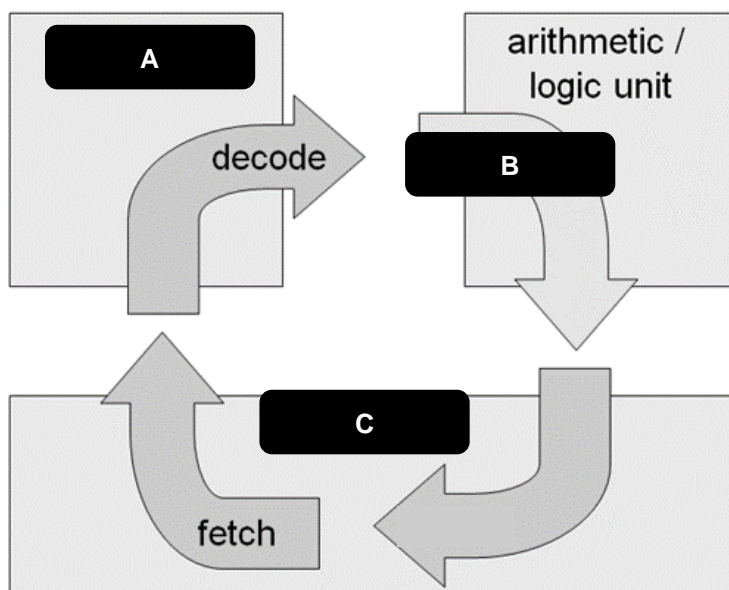
**Any reference material brought into the examination room must be handed to the invigilator before the start of the examination.**

**Question 1**

- a) Explain the difference between data and information. 3  
State ONE (1) example.
- b) State ONE (1) use of computer systems in the following organisations:
- i) Hospital 1
  - ii) Governments 1
  - iii) Travel companies 1
- c) Ameer buys a 4GB SD card for use as secondary storage in his phone.
- i) Calculate how many megabytes there are in 4GB. 1
  - ii) An SD card is a type of solid state storage. Discuss the advantages of solid state storage compared to magnetic storage. 3

**Total 10 Marks****Question 2**

- a) The diagram below shows the cycle for a processor carrying out instructions. Some labels are missing.

**Questions continue on the next page**

(c)- small amount of memory which is a part of a CPU - ---  
- temporarily stores frequently used instructions and data for  
quicker processing by the CPU of a computer

**Marks**

**1**

i) State the name missing at label A.

**1**

ii) State the name missing at label B.

**1**

iii) State the name missing at label C.

**b)** Complete the missing words describing the purpose of a clock in a processor.

i) A computer's clock is found on a microchip that regulates the timing and speed of all the functions of a computer. **1**

ii) Faster clock speeds result in more operation being performed in a set time. **1**

iii) A clock's speed is measured in hertz. **1**

**c)** Explain the term cache memory and why it is used. **2**

**d)** Explain the purpose of driver software. **2**

**Total 10 Marks**

### Question 3

**a)** Hadi is an interior designer and has created a vector image map called *groundfloormap.ai* using Adobe Illustrator.

i) Describe the term "**vector image**". **2**

ii) Describe the impact on the quality of her work if she enlarges the drawing. **1**

iii) The file size of the map is 2.52 megabytes. 2520 kilobytes **1**

Convert this to kilobytes.

iv) Hadi needs to send the work to her manager. The original file is too large to send using her regular email provider. **2**

Describe TWO (2) methods Hadi could use to ensure her work can be sent to her manager.

**b)** Convert the hexadecimal number 5F to a decimal number. Show your working. **2**

**c)** Convert the decimal number 78 to hexadecimal. Show your working. **2**

**Total 10 Marks**

**Questions continue on the next page**

**Question 4**

- a) State TWO (2) types of wireless transmission, other than Bluetooth. 2
- b) The OSI Reference Model divides network communications into SEVEN (7) layers. 6  
Each layer performs specific functions when transmitting data across a network.  
Describe any THREE (3) of these layers.
- c) Draw a diagram showing FOUR (4) computers connected in a network using a mesh topology. 2

**Total 10 Marks**

**Question 5**

- a) The UK Copyright, Designs and Patents Act aims to protect various types of work from being copied. 2  
Identify TWO (2) types of work that are protected by the UK Copyright, Designs and Patents Act.
- b) Discuss ONE (1) environmental issue with the increasing global ownership of mobile phones. 2
- c) A logic circuit contains the following logic:  
$$P = (A \text{ AND } B) \text{ OR } (\text{NOT } C)$$
- i) Draw a logic gate diagram that shows the relationship between A, B, C and P. 4
- ii) State the value of P if:  
  - A, B and C all have the initial value of 1 1
You **must** show your working.
- iii) State the value of C if:  
  - A and B both have the initial value of 0
  - P has the output 0 1
You **must** show your working.

**Total 10 Marks**

**End of paper**