



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.

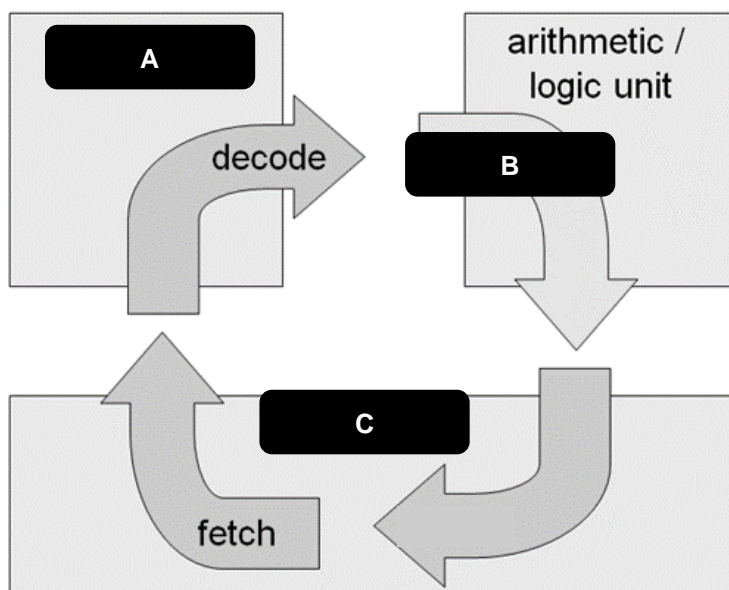
Question 1

- 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 data processing 1
 - iii) Travel companies reservation system 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

	Marks
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.	1
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 _____ of all the functions of a computer.	1
ii) Faster clock speeds result in more _____ being performed in a set time.	1
iii) A clock's speed is measured in _____.	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. 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