



# Introduction to Computer Science

## Sample

### 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.**

<b>Answer ALL questions</b>
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**Marks**

**Question 1**

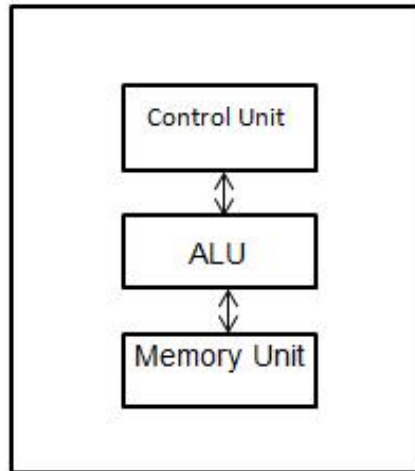
- a)** Computers are available in different sizes and are used for many different purposes. However, they share common characteristics.
- i) Identify THREE (3) main functions of a computer system. **3**
  - ii) Identify TWO (2) essential components of a computer system. **2**
- b)** The amount of data that is processed and stored by computers is increasing.
- i) Identify TWO (2) types of computer that can be used to store mass volumes of data. **2**
  - ii) Describe THREE (3) requirements of a computer system that stores and processes large amounts of data. **3**

**Total 10 Marks**

**Questions continue on next page**

Question 2

- a) The most important hardware component of a computer system is the central processing unit (CPU). The following diagram shows the main components of a CPU.



- i) Explain the purpose of the arithmetic and logic unit (ALU). 3
  - ii) Describe the function of a bus in relation to a CPU. 2
- b) An essential component of a computer is a motherboard.
- i) Identify THREE (3) main components of a motherboard. 3
  - ii) Describe the function of a motherboard. 2

**Total 10 Marks**

**Questions continue on next page**

## Question 3

- a) Briefly describe one feature of a closed source operating system.
- b) For each of the following statements, state whether it is an example of a *multithreading operating system*, a *multitasking operating system* or a *real-time operating system*.
- i) An operating system that allows more than one program to run at the same time. **1**
  - ii) An operating system that responds to input instantly. **1**
  - iii) An operating system that enables different parts of a single program to run at the same time. **1**
- c) A number of criteria should be considered when obtaining application software, for example, whether a software licence is required or whether to use integrated software.
- i) Explain THREE (3) purposes of a software licence. **3**
  - ii) Describe THREE (3) features of integrated software.

**Total 10 Marks****Questions continue on next page**

Question 4

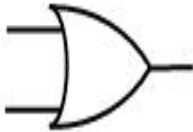
- a) i) In the table below are examples of THREE (3) image file formats. Identify if each one uses *lossy* or *lossless* compression. 3

Image file format	Type of compression used
PNG	
GIF	
JPEG	

- ii) Describe TWO (2) features of an image if it is compressed using lossy compression. 2

- b) Logic gates enable a digital system to make decisions based on the inputs to the logic gate.

- i) Identify which logic gate the following symbol represents. 1



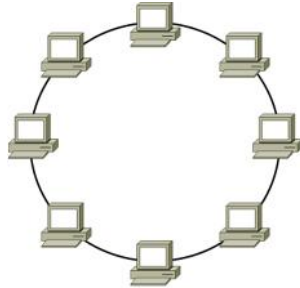
- ii) Identify FOUR (4) functions of a logic gate. 4

**Total 10 Marks**

**Questions continue on next page**

**Question 5**

- a) A departmental manager wants to upgrade the computer network that is currently used in her department. She has chosen the following network topology to be used:



- i) Identify the network topology that the departmental manager has chosen. 1
  - ii) Outline FOUR (4) advantages of choosing this topology. 4
- b) It is important that respect is shown to other users when using computers. It is also essential that organisations who store data on people do so with due regard to the law.
- i) Explain briefly what is meant by *netiquette*. 2
  - ii) Describe THREE (3) aims of the UK Data Protection Act 1998 3

**Total 10 Marks**

**End of paper**