



Name:

Index:

Reg.no.:

Class:

Date:

0478/11 – June 2019

3 Five descriptions of different input or output devices are given in the table.

Complete the table by stating the **name** of each input or output device.

Description	Name of device
This is an input device that works by shining a light onto the surface of a document. The light source is automatically moved across the document and the reflected light is captured by mirrors and lenses.	
This is an input device where a laser or a light source is moved across an object. The width, height and depth of the object are measured to allow a model to be created.	
This is an output device that uses many small mirrors to reflect light towards a lens. This will display an image.	
This is an output device that creates an object by building layer upon layer of material.	

[5]

(b) The law company wants to purchase a new file server.

The company can purchase a server with either solid state storage or magnetic storage. After discussion, it decides to purchase a file server with magnetic storage.

Explain why the company chose magnetic storage rather than solid state storage.

.....

.....

.....

.....

.....

.....

.....

.....

.....

[4]

(c) The law company also uses optical storage.

Give **three** different examples of optical storage.

1

2

3

[3]

0478/12 – June 2019

1 Input and output devices are often connected to a personal computer.

(a) Identify **three** input devices that can be connected to a personal computer.

1

2

3

[3]

(b) Identify **three** output devices that can be connected to a personal computer.

1

2

3

[3]

2 A finance company uses off-line storage to archive their accounts.

(a) Explain what is meant by off-line storage.

.....

.....

.....

..... [2]

(b) The computers in the finance company use both primary and secondary storage.

(i) Give **one** example of primary storage.

..... [1]

(ii) Give **two** examples of secondary storage.

1

2

[2]



- 3 Vanessa writes a paragraph as an answer to an examination question about the central processing unit (CPU).

Use the list given to complete Vanessa's answer by inserting the correct **six** missing terms. Not all terms will be used.

- Components
- Data
- Decoded
- Executed
- Fetched
- Instructions
- RAM
- ROM
- Secondary storage

The CPU processes and

An instruction is from

into the CPU where it is then Once this has taken place the instruction is then

[6]

- 4 (a) Marley wants to store a video he has created for his school project.

He considers using a DVD or a Blu-ray to store the video.

Explain **two** differences between a DVD and a Blu-ray.

1

.....

.....

.....

2

.....

.....

.....

[2]



(b) A microprocessor uses ROM.

Explain what is meant by ROM.

.....

.....

.....

.....

.....

..... [3]

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(c) The information point uses both primary and secondary storage.

Explain what is meant by primary and secondary storage.

Primary

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

0478/12 – November 2019

6 Touch screen technologies can be described as resistive or capacitive.

Six statements are given about resistive and capacitive technology.

Tick (✓) to show if the statement applies to **Resistive** or **Capacitive** technology.

Statement	Resistive (✓)	Capacitive (✓)
This touch screen has multi-touch capabilities		
This touch screen cannot be used whilst wearing gloves		
This touch screen is made up of two layers with a small space in between		
This touch screen uses the electrical properties of the human body		
This touch screen is normally cheaper to manufacture		
This touch screen has a quicker response time		

[6]



- 1 A Von Neumann model for a computer system has a central processing unit (CPU) that makes use of registers.

(a) Identify **three** registers that may be used.

Register 1

Register 2

Register 3 [3]

(b) The CPU is responsible for processing instructions.

One stage of processing instructions is the decode stage.

(i) Identify the **two other** stages of processing instructions.

Stage 1

Stage 2 [2]

(ii) Identify the component of the CPU that is responsible for decoding instructions.

..... [1]

- 6 Six statements are given about touch screen technology.

Tick (✓) to show if the statement applies to **Capacitive** or **Resistive** touch screen technology.

Statement	Capacitive (✓)	Resistive (✓)
Needs pressure to be applied to create a circuit		
May not register a touch if the user is wearing gloves		
More commonly used in smartphones		
More responsive to a touch		
Needs an electrical field to be changed to register a touch		
Cheaper to manufacture		

[6]

- (b) State **two** benefits and **one** drawback of Leonard using a laser printer, instead of an inkjet printer, to print the letters.

Benefit 1

.....

Benefit 2

.....

Drawback

.....

[3]

0478/12 – November 2020

- 5 Tammy is buying a new computer that has an LED display.

- (a) Five statements about LED displays are given.

Tick (✓) to show if each statement is **True** or **False**.

Statement	True (✓)	False (✓)
It is a flat panel display		
It creates images using red, green and blue diodes		
It is not very energy efficient and gives off heat		
It can be used in mobile devices such as smartphones and tablets		
It is a front-lit display		

[5]

- (b) Tammy connects the computer to her home network. The computer has a MAC address and an IP address.

A paragraph is given about MAC addresses and IP addresses.

Complete the paragraph using the list of terms given. Not all terms need to be used.

- compiled
- computer
- control
- dynamic
- identify
- packet
- principal
- protocol
- similar
- unique

A MAC address is a media access address.

A network device has a MAC address that
can help the device in the network. An IP address
is an Internet address. An IP address can be static or
.....

[5]

0478/13 – November 2020

- 9 Elle uses both CDs and DVDs to store her school projects.

- (a) Give **three** similarities between a CD and a DVD.

1
.....

2
.....

3
.....

[3]

- (b) State **one** difference between a CD and a DVD.

.....
.....

[1]



(ii) Describe the operation of a HDD and how it stores data.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

0478 – November 2021

2 Magda has a mobile telephone.

She uses the touch screen on her telephone to send emails to her customers. The touch screen breaks, stopping Magda from using it to type her emails.

(a) Identify **one** other input device that would be built into the mobile telephone that Magda could use to send an email to her customers.

..... [1]

(b) The touch screen operates by using the conductive properties of the object that is used to touch the screen.

State whether the touch screen is a resistive, capacitive or infra-red touch screen.

..... [1]

0478 – November 2021(2)

7 Five statements are given about devices.

Tick (✓) to show if each statement applies to a 3D scanner, barcode reader or a Quick Response (QR) code reader. Some statements may apply to more than **one** type of device.

Statement	3D scanner (✓)	Barcode reader (✓)	QR code reader (✓)
uses position and alignment markers for orientation when scanning			
scans the shape and appearance of an object			
uses reflected light from a laser to convert a black-and-white pattern into binary			
can often be built into an Electronic Point Of Sale (EPOS) terminal, for example, a supermarket checkout			
it is an example of an input device			

[5]

(b) Random access memory (RAM) is an example of primary storage.

Give **three** examples of data that is commonly stored in RAM.

- 1
- 2
- 3 [3]

2 A library has a self-checkout system that allows customers to register books that they want to borrow.

The self-checkout system has a central processing unit (CPU).

The CPU has two cores.

(a) State the purpose of a core in the CPU.

- [1]

(b) The CPU is replaced with one that has four cores.

Explain the effect this has on the performance of the self-checkout system.

- [2]

(c) The CPU contains registers and buses.

(i) Describe the role of a register in the CPU.

- [2]

- (ii) Identify **one** bus that can be found in the CPU and explain its purpose in the fetch–decode–execute cycle.

Bus

Purpose

.....

[3]

3 Five network terms or definitions are given in the table.

Complete the table by giving the missing term or definition.

Term	Definition
router	
.....	This address is assigned by the network and used to identify a device on a network.
network interface card (NIC)	
.....	This address is assigned by the manufacturer and is used to uniquely identify the device.
.....	This can be hardware or software based and filters traffic coming into and out of a network.

[5]

- 10 A computer has pages A, B and C that are stored in RAM. Page D needs to be sent to the RAM but the RAM is full.

Page B is **not** needed immediately.

Explain how virtual memory can be used in this scenario.

.....

.....

.....

.....

.....

[4]



0478 – November 2023

- (d) The CPU has a clock speed of 2.4 Ghz.

Describe what is meant by a 2.4Ghz clock speed.

.....

.....

.....

..... [2]

0478 – November 2023(2)

- 3 A user's computer has a central processing unit (CPU) that has a clock speed of 2 GHz.

She wants to change it to a CPU that has a clock speed of 3 GHz.

- (a) (i) State what is meant by clock speed.

.....

..... [1]

- (ii) Explain the effect this change will have on the performance of the CPU.

.....

.....

.....

..... [2]



4 A washing machine is an example of an embedded system.

(a) Give **two** characteristics of an embedded system.

1

.....

2

.....

[2]

0478 – November 2023(3)

(b) The CPU has cache.

Explain the purpose of the cache.

.....

.....

.....

.....

[2]

8 Draw and annotate a diagram to represent the role of a router.

[4]



9 A computer has secondary storage.

(a) The table contains statements about secondary storage.

Complete the table by writing the type of secondary storage that applies to each statement. Some types of secondary storage may apply to more than one statement.

Type of secondary storage	Statement
.....	data is stored using pits and lands
.....	data is stored using control gates and floating gates
.....	data is stored using electromagnets
.....	data is stored using a laser
.....	data is stored on a platter that is divided into tracks and sectors

[5]

0478 March 2024 (12)

2 A computer has a central processing unit (CPU).

The CPU includes the registers:

- Program counter (PC)
- Memory address register (MAR)
- Memory data register (MDR)
- Accumulator (ACC)
- Current instruction register (CIR).

(a) The table contains **five** statements about the role of registers in the fetch–decode–execute cycle of a CPU.

Letter	Statement
A	PC stores the address of the next instruction to be accessed
B	MAR stores the instructions of the program that is running
C	MDR stores the data passed to it from the PC
D	ACC stores the result of each calculation
E	CIR stores the instruction currently being executed

Two of the statements are **not** correct.

Identify the letter of each incorrect statement.

Suggest a corrected statement for each.



Incorrect statement 1

Corrected statement

.....

.....

Incorrect statement 2

Corrected statement

.....

.....

[4]

(b) The computer has a single core 3.5 GHz processor and an 8 kB cache.

(i) State what is meant by a 3.5 GHz processor.

.....

..... [1]

(ii) The CPU is changed to a dual-core 3.5 GHz processor.

Explain how the number of cores affects the performance of a CPU.

.....

.....

.....

..... [2]

(iii) The amount of cache is increased to 64 kB.

Explain how the amount of cache affects the performance of a computer.

.....

.....

.....

..... [2]

- [5]

- Sensor
- Use
-
- [2]

1 A student has a portable tablet computer.

- 1
2 [2]

- [1]

- [1]

- (d) The computer processes instructions using the fetch–decode–execute (FDE) cycle.

Draw and annotate a diagram to show the process of the **fetch** stage of the FDE cycle.

[4]

- (c) The robot plants seeds and stops when it reaches a fence. It then turns and continues planting seeds. The robot uses sensors and a microprocessor to know when it reaches a fence.

Explain how the robot uses sensors and a microprocessor to know it has reached a fence.

[6]

5 Instructions are processed by a central processing unit (CPU) in a computer.

(a) Complete the paragraph about fetching an instruction into the CPU to be processed.

Use the terms from the list.

Some of the terms in the list will **not** be used. You should only use a term once.

address	arithmetic logic unit (ALU)	binary	control unit (CU)
current instruction register (CIR)	data	denary	driver
fetch	interrupt	memory address register (MAR)	
memory data register (MDR)	random access memory (RAM)		
read only memory (ROM)	secondary storage	signal	

The program counter contains the
 of the next instruction to be processed; this is then sent to the
 using the address bus. The address is then
 sent to the
 Once the address is received, the instruction stored at the location is
 sent to the, using the
 bus. The instruction is then
 sent to the that is built into the

[7]

(b) The CPU uses an instruction set to decode the instruction.

State what is meant by an instruction set.

.....
 [1]

(c) The table contains different types of sensors and a use for each.

Complete the table by giving a suitable use for each type of sensor. The first one has been done for you.

type of sensor	use
acoustic	to monitor whether a water pipe has cracked and is leaking and dripping onto the floor
temperature	
humidity	
infra-red	
magnetic field	

[4]

8 A student has a computer that has a central processing unit (CPU).

(a) Describe the role of the CPU in the computer.

.....
.....
.....
..... [2]

(b) The CPU contains registers.

(i) State the purpose of a register.

.....
..... [1]

(ii) Give **three** registers that are built into the CPU.

- 1
- 2
- 3

[3]

(c) One component in the CPU is the arithmetic logic unit (ALU).

Describe the purpose of the ALU.

.....

.....

.....

.....

.....

.....

..... [3]

(d) The student wants to replace the CPU to increase the performance of the computer.

Explain why a different CPU can increase the performance.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

0478 November 2024 (11)

5 A central processing unit (CPU) performs the fetch–decode–execute (FDE) cycle.

(a) Give the name of **two** registers that are used in the fetch stage of the cycle.

- 1
- 2

[2]



(b) Describe what happens at the decode stage of the cycle.

.....

.....

.....

.....

.....

..... [3]

(c) Give **one** register in the CPU that is used in the execute stage of the cycle.

..... [1]

(d) Buses are used in the CPU to transmit data through the FDE cycle.

Circle **three** buses that are used in the CPU.

fetch	address	register	execute
	data	decode	calculation
central	value	binary	control

[3]

(e) A user changes their CPU from one with a dual core and a clock speed of 2.4 GHz to one with a dual core and a clock speed of 3.5 GHz.

Explain the effect this change will have on the performance of the CPU.

.....

.....

.....

..... [2]

5 A barcode scanning system uses a check digit to check for errors in data on input.

(a) Explain how the barcode scanning system operates to check for errors.

.....

.....

.....

.....

.....

.....

.....

..... [4]

6 The table contains names and descriptions of components in a central processing unit (CPU).

Complete the table by giving the missing component names and descriptions.

Component name	Description
.....	sends signals to manage the flow of data through the CPU
program counter	
.....	stores the address of the data that is about to be fetched from random access memory (RAM) into the CPU
.....	transmits data between the RAM and the CPU
accumulator	
.....	stores an instruction when it is being decoded

[6]

- 3 An instruction is fetched from random access memory (RAM) into the memory data register (MDR) to be decoded.

(a) Identify **two** other registers that are used in the fetch stage of the cycle.

1

2 [2]

(b) Complete and annotate the diagram to show how the data is decoded once it has been fetched into the MDR.



[4]

- 3 A computer has a central processing unit (CPU), memory and secondary storage.

(a) The computer has a Von Neumann architecture.

Circle **three** registers that are found in the Von Neumann architecture.

accumulator	arithmetic register	binary counter
binary register	control register	current data register
current instruction register	data counter	instruction counter
logical register	program counter	storage register

[3]

(b) State the purpose of the CPU in the computer.

.....
..... [1]

(c) Computer A has a 2.1GHz quad-core processor.

Computer B has a 2.5GHz dual-core processor.

Computer C has a 5.2GHz single-core processor.

(i) Identify which computer is most likely to execute more instructions simultaneously.

Justify your answer.

Computer

Justification

.....
.....
..... [3]

(ii) Explain why Computer C can execute more instructions per second than Computer B.

.....
.....
..... [2]

(d) All three computers have the same instruction set.

Define the term instruction set.

.....
..... [1]

4 An automated teller machine (ATM) is a device where a person inserts their bank card and can request to withdraw money. The ATM also allows the person to check how much money they have in their bank account.

(a) A sensor is used to detect when a person stands within 1 metre of the ATM. When a person is detected, a welcome message is displayed on the screen.

(i) Identify an appropriate sensor for the ATM to use to detect a person.

.....
..... [1]

(ii) Describe the role of the microprocessor in detecting the person.

.....

.....

.....

.....

.....

..... [3]

(b) Describe the features of the ATM that identify it as an embedded system.

.....

.....

.....

..... [2]

(c) The ATM has a touch screen and a keypad.

The ATM may need to be used by people who are unable to see.

Identify **one** other input device and **one** other output device that can be built into the ATM to help people who are unable to see.

Input

Output

[2]

5 A computer is connected to a network.

(a) The computer has a network interface card (NIC) that has a media access control (MAC) address.

(i) One purpose of the NIC is to provide the computer with a MAC address.

Describe the other purposes of the NIC.

.....

.....

.....

..... [2]



(ii) Identify **three** characteristics of a MAC address.

1
.....
2
.....
3
.....

[3]

(b) The network allocates an internet protocol (IP) address to the computer.

(i) Tick (✓) **one** box to identify a valid IPv4 address.

A	110:255:2:1	☐
B	1.30.2FF.A9	☐
C	3.162.74.3	☐
D	8.0.257.6.8	☐

[1]

0478 June 2025 (11)

5 Data is processed by the central processing unit (CPU) in a computer that has a Von Neumann architecture.

(a) Complete the table with the missing terms and definitions about processing data.

Term	Definition
current instruction register (CIR)	
.....	This is a processing unit within the CPU that can fetch, decode and execute instructions.
.....	This is a list of all the commands that can be processed by the CPU.



cache	
accumulator	

[5]

(b) Identify the component in the CPU that is responsible for decoding an instruction.

..... [1]

(c) Explain how the clock speed can affect the performance of a CPU.

.....

.....

.....

.....

.....

..... [3]

0478 June 2025 (12)

1 A computer stores data temporarily in random access memory (RAM).

(a) RAM is one example of primary storage.

Give **one** other example of primary storage.

..... [1]

(b) Give **one** reason why data is only stored temporarily in the RAM.

.....

..... [1]

2 A student has an image file stored on their computer.

(a) The image file was taken by a digital camera.

Tick (✓) **one** box to show whether a digital camera is an example of an input, output, process or storage device.

- A input ☐
- B output ☐
- C process ☐
- D storage ☐

[1]

4 An employee uses a computer that has a Von Neumann architecture to complete many different tasks in their working day.

(a) The computer has a central processing unit (CPU).

Complete the table of components in the CPU and their descriptions.

Component	Description
.....	It sends signals to all the components in the CPU to manage the flow of data through the CPU.
.....	It carries out all the arithmetic and logic operations in the CPU.
cache	
program counter (PC)	
.....	It controls the number of fetch–decode–execute (FDE) cycles that are performed per second.

.....	It stores data immediately before it is transmitted to RAM and immediately after it is received from RAM.
-------	---

[6]

(b) The computer is an example of a general purpose computer and **not** an embedded system.

Explain why the computer is **not** an embedded system.

.....

.....

.....

..... [2]