Chhetri Academy

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GCSE COMPUTER SCIENCE

1.2

OCR J277 | Specification point 1.2.2

Secondary storage

Untiered

Past paper question booklet

8	2014-2024	Untiered
question groups	available papers	tier

Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

5 Apu has a handheld e-book reader that allows him to store and read electronic books.

(a) State **one** input and **one** output device that can be built into the e-book reader to allow users to read books.

Input device .....

.....

Output device .....

.....

[2]

(b) Types of secondary storage devices are magnetic, optical or solid state.

(i) State which type of storage is most suitable for storing the electronic books inside the e-book reader.

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

(ii) Explain **one** reason why this type of storage is the most suitable.

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

(c) Apu gets a free e-book on a CD-ROM from a magazine.

(i) Give **two** reasons why a CD-ROM is suitable in this case.

1 .....

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2 .....

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[2]

(ii) State whether a CD-ROM is magnetic, optical or solid state storage.

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

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(d) The manufacturer of the e-book reader provides proprietary software, which Apu can use to transfer the e-book from the CD-ROM to the e-book reader.

(i) Describe what is meant by proprietary software.

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

(ii) Explain **one** advantage to the manufacturer of providing proprietary software instead of open source software.

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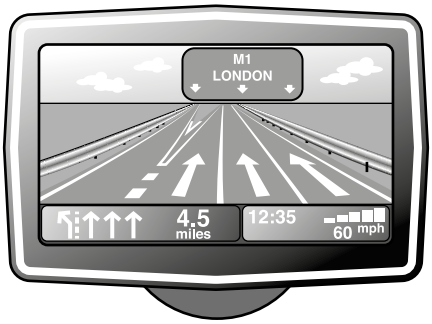
..... **[2]**

1 A satellite navigation system (Sat Nav) gives people instructions to reach their destination.



(a) A Sat Nav is an example of a computer system. Explain what is meant by a computer system.

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

(b) The Sat Nav has input and output devices.

(i) Explain why a computer system needs an input device.

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

(ii) Identify **one** input device that could be used in a Sat Nav to help disabled users and describe how it would be used.

Device .....

Use .....

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[2]

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(c) The Sat Nav has an in-built, solid state, secondary storage device.

(i) Explain why the Sat Nav needs a secondary storage device.

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

(ii) The manufacturers of the Sat Nav chose to use a solid state storage device instead of a magnetic hard disk.

Describe **one** reason why a solid state storage device was chosen to be used in the Sat Nav.

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

(d) A Sat Nav has a CPU (Central Processing Unit).

(i) State **one** task performed by the CPU.

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

(ii) Explain why the data and instructions for the Sat Nav are stored using binary representation.

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

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Turn over

1 William is creating a film for a school project using a digital video camera.

(a) The digital video camera has a secondary storage device.

(i) Explain why the digital video camera needs secondary storage.

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

(ii) The digital video camera uses solid state storage.

Explain why solid state storage is the most appropriate type of storage for the digital video camera.

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..... **[4]**

(b) William transfers the videos to a computer for editing.

(i) The computer has 1GB of storage free.

Calculate the number of videos that could be stored on the computer if each video was 100MB in size.

Show your working.

.....

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

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(ii) A program needs to calculate the size of files in bytes. The program must:

- Ask the user to input a file size in megabytes
- calculate and output the number of bytes this represents in a user friendly format (e.g. `"There are 5242880 bytes in 5MB"`).

Write an algorithm using pseudocode to calculate the number of bytes in a given number of megabytes.

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..... **[6]**

(c) William's computer has utility programs installed including automatic backup.

(i) William can choose between a full or incremental backup.

Identify the backup method William should use to backup the computer, justifying your choice.

Method: .....

Justification: .....

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

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Turn over

(ii) Give **one** additional utility program William could make use of and describe how he would use it.

Utility program: .....

Description of use: .....

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[3]

(d) William wants to upload his videos on the Internet and is considering releasing them under a Creative Commons license.

Explain how a Creative Commons license will impact the use of William's videos by other people.

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

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1 Kerry wants to buy a new computer, but she does not understand what the different parts of a computer do.

(a) Kerry has heard of a CPU but does not know what it is.

(i) The following sentences describe the purpose of a CPU.

Complete the sentences by filling in the missing words.

CPU stands for ..... .

It is the part of the computer that fetches and executes the .....

that are stored in ..... .

The CPU contains the Arithmetic ..... Unit (ALU) and

the ..... Unit (CU).

[5]

(ii) Kerry is looking at two computers; one has a single core processor and the other has a dual core processor.

Explain why having a dual core processor might improve the performance of the computer.

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

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(iii) One computer has 64 kilobytes of cache and the other has 512 kilobytes of cache.

Explain how the cache size can affect the performance of the CPU.

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

(b) Both computers have RAM and ROM.

(i) The table has **five** statements describing RAM and/or ROM.

Tick (✓) **one or more** boxes in each row to identify if that statement describes RAM and/or ROM.

	RAM	**ROM**
Stores data		
The memory is volatile		
Data will not be lost when the computer is turned off		
Data is read-only, cannot be changed		
Stores currently running data and instructions		

[5]

(ii) Give **one** difference between RAM and flash memory.

.....

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

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Turn over

(c) Kerry has 5GB of files to transfer from her laptop at work to her new computer. She has been told to buy an external solid state device to do this.

(i) Give **one** example of a solid state device.

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

(ii) Identify whether the device given in **part (c)(i)** is an example of primary or secondary memory.

.....

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

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(iii)* Kerry was originally going to use an optical storage device to transfer her files.

Discuss whether an optical or solid state device is the most appropriate media to transfer these files.

You may want to consider the following characteristics in your answer:

- portability
- robustness
- capacity
- cost

[8]

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Turn over

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(iv) The filesizes of Kerry's files are usually displayed in megabytes (MB) or gigabytes (GB).

Calculate how many MB are in 5GB. Show your working.

..... MB **[2]**

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6 Charlie has purchased a new tablet computer. The tablet has an internal secondary storage device.

(a) Describe what the internal secondary storage device will store.

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

(b) The storage device is a solid state device.

(i) Give **three** benefits of the tablet having a solid state device instead of a magnetic device.

1 .....

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2 .....

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3 .....

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[3]

(ii) Give **two** drawbacks of the tablet having a solid state device instead of a magnetic device.

1 .....

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2 .....

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[2]

7 A smart television allows the user to search the Internet and watch videos online.

(a) The smart television has both RAM and ROM.

(i) State the difference between RAM and ROM.

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

(ii) Give **two** examples of data that the smart television could store in RAM.

1 .....

2 .....

[2]

(b) The smart television has secondary storage.

(i) State, using an example, why the smart television needs secondary storage.

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

(ii) Identify **one** appropriate type of secondary storage for the smart television. Justify your choice.

Secondary storage type .....

Justification .....

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[4]

5 An artist has a computer that they use to create images.

Their computer has both hardware and software.

(a) The hardware includes primary and secondary storage.

(i) Explain why a computer needs both primary **and** secondary storage.

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

(ii) Give **one** example of a secondary storage device that the artist's computer will have **and** an example of the data that will be stored on it.

Secondary storage device .....

Example data .....

.....

[2]

(iii) The computer has Virtual Memory (VM).

The table has four statements about VM. Not all of the statements are correct.

Tick (✓) the **True** column for the statements that are correct.

Re-write any statement that is incorrect in the **False** column by changing the statement to make it true.

Statement	True (✓)	False – rewrite the statement to make it true
A section of primary storage is partitioned to act as virtual memory		
Data from ROM is transferred into VM		
VM is needed when RAM is full, or nearly full		
Data from VM is transferred back to secondary storage when needed		

[4]

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(b) The computer has an operating system and utility software.

State the need for utility software in a computer.

.....

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

(c) The artist uploads images to be displayed on a website. This is a client-server relationship.

(i) Identify the computer that is acting as the client in this scenario **and** justify your choice.

Client computer .....

Justification .....

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[3]

(ii) Identify the computer that is acting as the server in this scenario **and** justify your choice.

Server computer .....

Justification .....

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[3]

(d) The artist is working with a programmer on the development of a new piece of software.

The software will allow users to edit images on devices such as mobile telephones.

They are considering releasing the software as open source instead of proprietary.

(i) Describe **two** benefits to the artist and programmer of releasing the software as proprietary.

1 .....

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2 .....

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[4]

(ii) Describe **one** benefit to the users of releasing the software as open source.

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

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5 A musician uses a computer to make and record music.

(a)

(i) Tick (✓) **one** box to identify the correct description of sound sampling.

- ☐ The frequency of the wave is measured a set number of times each second.
- ☐ The amplitude of the wave is measured at set intervals.
- ☐ The digital sound wave is measured a set number of times each second.
- ☐ The analogue sound wave's resolution is measured at set intervals.

[1]

(ii) Explain how changing the bit depth will affect the sound file.

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

(b) The musician has run out of storage space on their secondary storage device and needs to buy a replacement.

(i) Identify whether the musician should buy a magnetic secondary storage device or a solid state secondary storage device for their computer.

Justify your choice.

Type .....

Justification .....

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[4]

(ii) Identify **one other** type of secondary storage.

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

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(iii) Tick (✓) **one** box to identify the smallest secondary storage capacity.

- ☐ 2.1 GB
- ☐ 300 MB
- ☐ 200 000 KB
- ☐ 0.0021 TB

[1]

(iv) The musician's recordings have an average (mean) file size of 3 MB. The musician has 1000 recordings.

Calculate an estimate of the storage space in GB that the 1000 files will require, assuming they are each 3 MB in size. Show your working out.

Working space:

Answer: ..... GB **[2]**