GCST

1.1.3
INPUT, OUTPUT AND STORAGE

TOPIC WISE EXAM QUESTIONS

ANSWERS

A-LEVEL OCR

1	(b)			3	1 mark per row.

Statement	True	False
BIOS stands for Boot Input Output Standard		✔
The BIOS can be used to alter hardware settings, such as which storage device the computer boots from.	✔	
BIOS settings are stored in RAM		✔

1	(c)	- Stored away from the computer(s)/remote… … so in case of disaster, data is not also damaged - All of the data (from multiple machines) can be backed up **at the same time** - Can be accessed from elsewhere / other machines - Storage can be expanded as necessary//no limit on size - Speed of access is not a priority for a backup - Can make recovery from another site easier - No physical space needed for backup hardware - No on site maintenance required - Allows more local storage capacity for data	2	Allow multiple interpretations of virtual storage (e.g. cloud / devices not connected directly to the computer) Do not allow space on its own or memory for storage

AS - Level

1	(e)	(i)	- Monitor - Speakers//Headphones	AO2.1 (2)	Must be output devices. Must be suitable for video editing.

1	(e)	(ii)	**Mark Band 3–High Level** **(7-9 marks)** The candidate will provide a range of accurate benefits and drawbacks of both magnetic and flash devices. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation. The candidate will come to a clear conclusion that must be justified by their comments *There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated.* **Mark Band 2-Mid Level** **(4-6 marks)** The candidate will provide drawbacks or benefits about both magnetic and flash methods. These will be for the most part relevant. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation. The candidate will attempt to come to a conclusion, although it may not be fully justified by their answer, *There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence.* **Mark Band 1-Low Level** **(1-3 marks)** The candidate has provided some drawbacks or benefits of magnetic or flash methods. The material is basic and contains some inaccuracies.	AO1.1 (2) AO1.2 (2) AO2.1 (2) AO3.3 (3)	AO1 Magnetic Benefits: - Lower price per GB - As standard comes in high capacity Magnetic Drawbacks: - Lower R/W speed - Higher power consumption - Moving parts /less durable Flash Benefits: - Higher R/W speed - No moving parts/more durable - Lower power consumption - Can have a higher capacity. Flash Drawbacks: - Higher cost per GB - At higher capacities prices rise exponentially. AO2: Suitability of Magnetic: - Video files are very large, benefiting magnetics low cost per GB - Can be used to archive the different video elements after it's been rendered - Could possibly get damaged while being transported between the different filming sites - Slow R/W speeds may take it longer to load into the software Suitability of flash: - Very fast R/W speeds therefore reducing the amount of loading time during the editing process/giving smoother playback - If money is not a barrier, flash can be bought in sufficient capacities for videos.

5	(a)		• Stores instructions / programs **currently running** • Stores data currently **in use**	AO1.1 (1)	
5	(b)		• If the amount of RAM available is insufficient... • ...Used to store instructions/data • ...Using secondary storage. • Likely to be loading large image files (which may exceed her RAM) • Likely to be loading large programs (which may exceed her RAM)	AO2.1 (2)	

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		ii	• RAM is <u>volatile</u> • Used for storing programs/data/parts of OS <u>currently in use</u> • ROM is <u>non volatile</u> • • Used for storing (e.g.) BIOS / bootstrap	4 AO1.2	
(c)			**Mark Band 3–High Level (7-9 marks)**	9	**AO1** Magnetic devices include magnetic hard drives and magnetic tape.
			The candidate demonstrates a thorough knowledge and understanding of magnetic and solid state storage. The material is generally accurate and detailed. The candidate is able to apply their knowledge and understanding directly and consistently to the context provided. Evidence/examples will be explicitly relevant to the explanation. The candidate provides a thorough discussion which is well balanced. Evaluative comments are consistently relevant and well-considered. There is a well-developed line of reasoning which is clear and logically structured. The information presented is relevant and substantiated. **Mark Band 2-Mid Level (4-6 marks)** The candidate demonstrates reasonable knowledge and understanding of magnetic and solid state storage; the material is generally accurate but at times underdeveloped. The candidate is able to apply their knowledge and understanding directly to the context provided although one or two opportunities are missed. Evidence/examples are for the most part implicitly relevant to the explanation. The candidate provides a sound discussion, the majority of which is focused. Evaluative comments are for the most part appropriate, although one or two opportunities for development are missed. There is a line of reasoning presented with some structure. The information presented is in the most part relevant and supported by some evidence. **Mark Band 1-Low Level (1-3 marks)**	AO1.1 (2), AO1.2 (2), AO2.1 (2), AO3.3. (3)	Data stored by altering the magnetic field of a small section of the tape or disk; one orientation represents a binary value of 1, the opposite orientation represents a binary value of 0. Written to using a read head. Read head can then read the magnetic field and retrieve the data. These read and write heads move across the disk or the tape moves under the heads. Solid state devices store data using semiconductors; drives can be based on NAND Flash or DRAM. No moving parts are required. Backup involves copying potentially large amounts of data to and from storage devices at regular intervals. Servers distribute data to client devices. **AO2** Magnetic hard drives entirely suitable for storing operating system, software and data. Large capacity, cheap (by comparison) purchasing price and reliability make them idea for heavy use in an insurance office. Solid state drives have no moving parts and offer an increase in speed and quicker access to customer records. However, smaller capacity (in comparison) may be an issue for larger data sets. Backup systems may be required to maximise storage whereas access speed is not so much of an issue Limited lifespan of SSDs due to limited read/writes may restrict use in data heavy applications. Servers will require quick access to data to serve multiple client machines but will also be extremely read/write heavy. **AO3** Both suitable for the insurance office but for different purposes. SSDs to store operating system and program files will ensure quicker boot up and loading of programs. May

The candidate demonstrates a basic knowledge of magnetic and solid state storage; the material is basic and contains some inaccuracies. The candidate makes a limited attempt to apply acquired knowledge and understanding to the context provided.

The candidate provides a limited discussion which is narrow in focus. Judgments if made are weak and unsubstantiated. The information is basic and communicated in an unstructured way. The information is supported by limited evidence and the relationship to the evidence may not be clear.

0 marks
No attempt to answer the question or response is not worthy of credit

be useful for both client and servers to store operating systems
Magnetic hard drives to store large quantities of data provides reliability and large capacity at small (by comparison) cost. May be most suitable for storing large amounts of data on client devices and for backup systems.
Magnetic tape device may be suitable for backing up customer data as too slow for use on day-to-day basis.
Use of solid state devices for storing customer data that is frequently accessed means needing to plan for replacement of drives when read/write limit reached.
Solid state devices better if used in mobile devices (e.g. for mobile insurance workers) as relatively small chance of damage if dropped as no moving parts.

| 1 | a | **Input Device**

Microphone…
…To allow the device to hear spoken requests.

Buttons…
…To turn the device off or on / To mute device/ to put device in privacy mode

(max 1 device name, max 1 reason)

Output Device

Speaker…
…To play the device's responses

LEDs…
…To indicate the device is on/listening

Screen…
…To show visual information

(max 1 device name, max 1 reason) | 4

AO1.2
(2)
AO2.1
(2) | Do not award "…listen out for the phrase "Hey Bertie""
Award any appropriate input/output device |

| 5 | a | | Foot mouse/pedal…
 … press key/click button to send signal.

 Camera/eye tracker…
 …Move/blink to send signal

 Microphone…
 …Make sound to send signal

 Puff/suck switch…
 ..blow/suck to send signal.

 Accept any sensible answer. 1 mark for naming of input device, 1 mark for use. | 2
 (AO2.1)
 Identify (1),
 AO2.2)
 Describe (1) | First mark must be hardware not software |

AS - Level

	b		- The software will not need updating - Can be loaded quickly when the frame is switched on/will not be lost when the frame is switched off. - Cannot be (accidentally) overwritten/deleted	2 AO1.2 (2)	
	e		- Potentially vulnerable to hacking. - Reliant on an internet connection/requires a fast enough internet connection. - Reliant on company servers. (1 per -, max 1)	1 AO2.1 (1)	
	f		- (External) hard (disk) drive/ solid state drive - Flash memory card/stick/drive (1 per -, max 1)	1 AO1.2 (1)	Accept SD Card/Micro SD Card Do not accept just 'USB', must be USB stick/device//pen/drive

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| | | ii | Random Access Memory (1)
 A form of primary memory (1)
 Used to hold data and/or programs <u>in use</u> (1)
 Volatile/Loses its contents when power is lost. (1)

 (Max 2) | 2

 (AO1.1) |
| | c | i | - Has no moving parts… (1)

 … less likely to be damaged / data loss (1)
 - Consumes less power… (1)

 …meaning battery needs recharging less often (1)
 - Unaffected by magnetic fields.. (1)

 - …which could lead to data loss. (1)

 - Faster access speed… (1)

 - …so photographs can quickly be written to it / browsed. (1)

 (Mark in pairs) | 2

 AO1.2

 (1)

 AO2.1

 (1) |

1				- Hard drive… …to store files and software - Removable hard drive… …to store archive of files - CDROM/DVDROM reader… …for the importation of software - Memory stick / solid state device… …to allow transport of materials between office and home - CD(R)/DVD(R) (reader / writer…) / optical disk …to store back-up of files / software / portability of files - Cloud storage… …to make files available to others in the dept / from anywhere / on any device / backup	6	Mark as three pairs of marks. Second mark is dependent on getting the first Uses are all examples, other sensible uses should be credited. Uses can be generic, but if specific they need to be about the finance manager Not: USB on its own Only allow the same reason once e.g. 'to store files' **Examiner's Comments** The intention of the question was to make candidates consider hardware choices in a simple scenario. The list of accepted answers is shown in the published markscheme. Almost any device was accepted if the candidate could come up with a sensible reason for its use, although devices like floppy disk drives were not sensible devices for use by a finance manager in a firm. 'Magnetic tape' was a relatively popular response which was not accepted on the basis that it did not describe a device, but a 'magnetic tape drive' to store archive material was considered sensible.
3	i		- Movement of images on the screen - Used to illustrate weather systems which would otherwise not be possible	2	Two mark points are: Movement and weather systems **Examiner's Comments** Some good answers but many simply rewrote the words in the question on the linesof 'An animation is when images are animated.' Responses needed to refer to the scenario to earn full marks. Nothing complicated was expected, for example 'moving images to show how a weather system develops' would earn two marks.
	ii		- The next image / stage presented is determined by the input determined by the user - Questions may be asked about one stage and the software will move to a next stage determined by the response to the question given	2	Two mark points are: Output determined by student input and an example (eg question asked and answered or hyperlink / hot button chosen) **Examiner's Comments** It was important to indicate that the output from the software would be influenced by the input from the student even if it was only indicating whether answers to questions were correct or not.

4		i	• ROM is quick to start up so the system can be started up quickly (in an emergency) (1). • ROM cannot be altered so there is no chance of the OS being accidentally or maliciously changed (on what is a safety critical system) (1).	2	Up to 2 marks for valid identification and description that demonstrates application of knowledge and understanding to given context.
		ii	• The contents of RAM are wiped (1) whereas the contents of ROM remain the same (1).	2	Up to 2 marks for a valid description.
6			• Device is likely to undergo lots of sudden movement (1 – AO1.2) magnetic hard drives can be susceptible to damage if moved quickly (1 – AO3.3) due to the head coming into contact with the platter (1 – AO3.3) whereas flash memory has no moving parts and so is not affected (1 – AO3.3). • The device is likely to be small (1 – AO1.2) – hard drives require enough space for their moving parts (1 – AO3.3) whereas flash memory, having no moving parts, requires much less space (1 – AO3.3).	3	Up to 3 marks for a valid explanation. Allow maximum 1 mark for mention that little data is needed and so large capacity of magnetic storage not needed. Maximum 1 mark for demonstrating understanding (AO1.2). Up to 2 marks for evaluation (AO3.3).
7			▫ A printer [1]… ▫ … to print (hard copies) of photographs / relevant documentation [1] OR ▫ A monitor [1] … ▫ …which may be of a larger size / higher quality than that on her laptop making editing easier. [1]	2	Accept any output device if accompanied by a sensible justification.

If you found this useful, drop a follow to help me out!

THANK YOU!

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