MODULE B MEMORY AND STORAGE · B1

Primary storage, RAM and ROM: mark scheme

~25 minutes · 20 marks · Cambridge 0478 syllabus 3.3.1

How to use. Mark positively. "Any N from" means award one mark per point up to N. **//** separates alternative answers for the same mark. Words in (brackets) are not needed for the mark. Credit any other valid answer that shows the same understanding.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) 0478 3.3.1	Storage / memory that is directly accessed by the CPU / processor	**1**	
1(b) 0478 3.3.1	Any two from: RAM // random access memory ROM // read only memory Cache	**2**	Registers are not credited. Secondary storage devices are not credited.
2 0478 3.3.1	ROM is volatile: False RAM stores the data currently in use: True ROM contents normally changed every time a program runs: False Both RAM and ROM directly accessed by the CPU: True	**4**	One mark per correct row. Two ticks in a row: no mark for that row.
3 0478 3.3.1	start-up instructions non-volatile volatile read and write	**4**	One mark per correct term, in order.
4 0478 3.3.1	Any three from: The data in RAM is lost (when the battery runs out) // e.g. the exhibit number typed in is lost ... because RAM is volatile The contents of ROM are kept // because ROM is non-volatile When switched on again, the start-up instructions in ROM are run / read by the CPU (Part of) the operating system / the guide's program is loaded into RAM again	**3**	max 3. Must refer to both RAM and ROM for full marks.

QUESTION	ANSWER	MARKS	GUIDANCE
5 0478 3.3.1	Any four from: ROM stores the start-up instructions // the BIOS / bootstrap ROM is non-volatile // ROM keeps its contents when power is off ... so the instructions are available every time the guide is switched on ROM is read only // contents cannot normally be changed, so the start-up instructions cannot be changed / deleted by accident RAM stores the data / instructions currently in use RAM is read and write // contents can be changed (as the guide is used) RAM is volatile, so it cannot keep the start-up instructions when the power is off	**4**	Maximum 3 marks if only RAM or only ROM is described.
6 0478 3.3.1	Any two from: RAM is volatile, ROM is non-volatile // RAM loses its contents when power is off, ROM does not RAM is read and write, ROM is read only // RAM contents can be changed, ROM contents normally cannot RAM stores data / programs currently in use, ROM stores the start-up instructions RAM normally has a larger capacity than ROM	**2**	Each difference must refer to both RAM and ROM.

Total: 20 marks