MODULE J HARDWARE AND EMERGING TECH · J1

Input and output devices: mark scheme

21 marks · Cambridge 0478 syllabus 3.2.1 (what is meant by an input device and why it is required) and 3.2.2 (what is meant by an output device and why it is required)

How to use. One mark per creditworthy point up to the maximum shown. **/** separates alternative words; **//** separates alternative answers. 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 3.2.1	Any two from: (Hardware) used to enter / put data / instructions into a computer Captures data from the outside world // from the user Converts the data into a form the computer can process // into binary / digital data Required so the computer receives data / instructions to process // without input there is nothing to process Required so a user can interact with / control the computer Credit any other valid answer	**2**	max 2. A correct example alone (e.g. "a keyboard") is not enough. Do not credit "stores data" or "displays data".
1(b) 0478 3.2.2	Any two from: (Hardware) used to present / give out the results of processing (from a computer) In a form a person can see / hear // as a display / sound / printout Can cause a physical action // movement (e.g. an actuator) Required so the user can see / hear / use the results of processing Required so a computer can make something happen // control a device in the physical world Credit any other valid answer	**2**	max 2. A correct example alone (e.g. "a speaker") is not enough. Do not credit "stores data" or "puts data into the computer".
2(a) 0478 3.2.1, 3.2.2	3D scanner: Input device Actuator: Output device QR code scanner: Input device DLP projector: Output device Microphone: Input device	**5**	One mark per correct row. A row with both boxes ticked scores 0 for that row.
3(a) 0478 3.2.1 (touch screen)	Beams of light broken: infra-red Top layer pushed onto layer below: resistive Finger changes the electrical charge: capacitive	**3**	One mark per correct row. Accept IR for infra-red. Ignore spelling if the type is clear.

QUESTION	ANSWER	MARKS	GUIDANCE
3(b) 0478 3.2.1 (touch screen)	Capacitive (touch screen) … it detects a touch by the change in electrical charge caused by a (bare) finger // a (thick) glove does not change the charge on the screen // a glove does not conduct / stops the finger's charge reaching the screen	**2**	Second mark depends on "capacitive". If resistive or infra-red is given, award 0. Do not accept "the glove is too thick to press the screen" or "gloves block the beams".
4(a) 0478 3.2.2 (printers)	400 text-only leaflets: laser printer One high-quality colour photograph: inkjet printer Small plastic clip: 3D printer	**3**	One mark per correct row. Accept "laser", "inkjet", "3D".
5(a) 0478 3.2.1, 3.2.2	Mark in pairs: one mark for a suitable device, one mark for why it is required in this system. **Input** (max 2), any one pair from: QR code scanner // (digital) camera … … to read / capture the QR code on the plant label so the system can identify / look up the plant Touch screen … … so the customer can choose / search for the plant // select options Keyboard // microphone … … so the customer can type / say the name of the plant to look it up **Output** (max 2), any one pair from: (LCD / LED) screen // touch screen // monitor … … to display the care instructions so the customer can read them Speaker … … to read the care instructions aloud so the customer can hear them (Inkjet / laser) printer … … to print the care instructions so the customer can take them home Credit any other valid device with a matching reason	**4**	max 4. Each reason mark depends on a suitable device of the right kind. The reason must refer to the help point (e.g. the QR code, the plant, the care instructions); "to input data" or "to output data" alone is not enough. Accept "barcode scanner" only if the reason says it reads the QR code. Accept LCD / DLP projector with a display reason. Do not credit an output device given as the input device, or the reverse. If more than one device is given in a box, mark the first.

Total: 21 marks