MODULE H SOFTWARE · H4

Peripheral management, drivers and the user interface: mark scheme

21 marks · Cambridge 0478 syllabus 4.1.2 (describe the role and basic functions of an operating system, including providing an interface and managing peripherals and drivers)

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. No marks for brand names.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) 0478 4.1.2	One mark for each correct row: The barcode scanner is a peripheral: True A device driver is part of the stock-control software: False A new model … can always use the driver written for the old model: False The operating system uses device drivers to communicate with the peripherals: True	**4**	A row with both boxes ticked scores 0.
2(a) 0478 4.1.2	Any two from: Software // a program … that allows the operating system to communicate with / control a (hardware) device / peripheral … translates (general) instructions / data from the operating system into commands / a form the device understands (and back) … written for one specific device / model / type of hardware	**2**	max 2. "Software" alone scores 1 mark only. "It makes the device work" alone is too vague. Do not accept "hardware".
2(b) 0478 4.1.2	Any two from: A device driver is specific to one device / model (of printer) The new model is different hardware // may use different commands / instructions (from the old model) The old driver may not translate the operating system's instructions into commands the new printer understands Without the correct driver the operating system cannot communicate with / control the new printer // the new printer would not print (correctly)	**2**	max 2. "Because it is a new printer" alone is too vague.

QUESTION	ANSWER	MARKS	GUIDANCE
2(c) 0478 4.1.2	Any one from: To fix bugs / errors (in the old driver) To add new features // support new functions of the device To keep the device compatible with an updated operating system To fix a security weakness / vulnerability To improve the performance / reliability of the device	**1**	"To make it better" / "faster" alone is too vague.
3(a) 0478 4.1.2	Any three from: The scanner sends (the barcode) data to the computer / processor The scanner sends an interrupt (signal) to the processor (to show data is ready) The operating system uses the scanner's device driver ... ... to translate / interpret the data from the scanner into a form the operating system / processor can use The operating system manages the transfer of the data (from the scanner) to memory / RAM // holds the data in a buffer The operating system passes the data to the stock-control software // provides a platform so the application can use the scanner	**3**	max 3. "It manages the scanner" / "it controls the scanner" alone repeats the question and is not credited. The interrupt point is credit for valid extra knowledge (0478 4.1.4); it is not required for full marks.
4(a) 0478 4.1.2	Any two from: It allows the user to communicate / interact with the computer / hardware / software It receives / accepts input from the user, e.g. touches on the screen It displays output / feedback to the user, e.g. messages It hides the complexity of the hardware // lets the user use the computer without knowing how the hardware works It provides a graphical user interface // icons / menus / windows // a command line interface	**2**	max 2. "Lets the user use the computer" alone / "makes it easy to use" alone is too vague.
4(b) 0478 4.1.2	Any two from, e.g.: A confirmation that the label has printed // that the parcel has been recorded An error message about a peripheral, e.g. printer out of labels / paper jam // barcode not read A message that a device is not recognised // a driver is missing / being installed A prompt / instruction, e.g. scan the next parcel Icons / menus / buttons to choose a task Details of the order / parcel, e.g. items to pack, delivery address	**2**	max 2. Two answers that say the same thing in different words score 1 mark only. "Information" / "messages" alone is too vague.

QUESTION	ANSWER	MARKS	GUIDANCE
5(a) 0478 4.1.2	Any five from: The operating system detects / recognises that a new device has been connected It checks whether the correct device driver is installed If not, the correct driver is installed // the operating system finds / downloads the driver // the user is asked to install it (e.g. from the manufacturer) It uses the interface to tell the user the printer is ready // that a driver is needed The stock-control software sends the print request / label data to the operating system The operating system uses the driver to translate the label data / instructions into commands the printer understands The operating system manages the transfer of the data (from memory) to the printer // holds the data in a buffer / print queue until the printer is ready The printer sends signals back, e.g. ready / busy / out of labels, and the operating system shows any error to the user	**5**	max 5. Max 3 if the device driver is not mentioned. "The operating system controls the printer" alone is not credited. Credit a valid point about the printer sending an interrupt to the processor (0478 4.1.4).

Total: 21 marks