MODULE H SOFTWARE · H2

What an operating system does: mark scheme

21 marks · OCR J277 spec 1.5.1: the purpose and functionality of operating systems (user interface; memory management and multitasking; peripheral management and drivers; user management; file management)

How to use. 1 mark per bullet up to the maximum shown. **/** separates alternative answers. Words in (brackets) are not needed for the mark. Credit any other valid answer that shows the same understanding. Paging and segmentation are not required and are not needed for any mark.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.5.1	To manage the computer's hardware / software / resources // to control the (whole) computer system To provide a user interface // to let the user communicate with / use the computer To allow (application) programs to run // to run the booking / email programs	**1**	1 mark for any bullet, max 1. Do not accept "to make the computer work" alone (NE). Do not accept "to book appointments / send emails" (that is application software).
1(b) J277 1.5.1	Windows Icons Menus Pointer / cursor (controlled by a mouse) Touch screen input / gestures (e.g. tap, swipe) Voice / speech input Typed commands // command line Buttons / dialogue boxes / messages to the user (e.g. error messages) Accessibility settings // text size / colours can be changed	**2**	1 mark per bullet, max 2. Mark the first two answers only. Accept GUI / graphical user interface as one feature. Accept "WIMP" as one feature only. Do not accept hardware alone (e.g. "keyboard", "monitor"). Credit any other valid feature.
2(a) J277 1.5.1	Memory management transfers instructions into RAM: True Multitasking is one program used by several users: False User management controls which files each user can open: True Peripheral management creates, names and moves folders: False	**4**	1 mark per correct row. 2 ticks in a row = 0 for that row.

QUESTION	ANSWER	MARKS	GUIDANCE
3(a) J277 1.5.1	A device driver is software / a program ... that lets the operating system communicate with / control the printer It translates data / instructions from the OS into a form the printer understands Each printer (model) works differently, so the OS needs the driver for this printer Without the driver the printer would not work / the OS could not send data to it	**2**	1 mark per bullet, max 2. The second bullet can be awarded without the first. Do not accept "a driver is hardware / a cable". Do not accept "to connect the printer" alone (NE).
3(b) J277 1.5.1	The printer works much more slowly than the processor ... so data must be sent at a rate the printer can handle // the processor can carry on with other tasks while it prints Several programs / users may send data to the printer at the same time ... ... so the print jobs must be queued / sent one at a time The printer needs data in its own format, so the OS uses the driver to send it correctly The printer sends signals / messages back (e.g. out of labels / paper jam) that the OS must deal with	**2**	1 mark per bullet, max 2. A "..." point follows from the one before it. Accept "buffer" / "spooling" for holding data until the printer is ready. Do not accept "so it prints faster" alone (NE).
4(a) J277 1.5.1	When each program is opened, the OS transfers its instructions / data from secondary storage into RAM The OS allocates each program its own area / space in RAM The OS keeps each program's area separate // stops one program overwriting another program's data The OS keeps track of which memory is in use and which is free All three programs are held in RAM at once, so the processor can switch between them // the OS shares processor time between them If RAM becomes full, the OS moves data that is not being used to virtual memory (on secondary storage)	**3**	1 mark per bullet, max 3. Do not accept "the whole program is stored in the processor / in ROM". Do not accept "more memory" alone (NE). Paging / segmentation not required.
4(b) J277 1.5.1	It frees / deallocates the memory // removes the music player from RAM ... so the memory can be allocated to other programs	**1**	Accept "frees / releases the memory" or "makes it available to other programs" alone. Do not accept "moves it to virtual memory" / "saves it" / "deletes the program".

QUESTION	ANSWER	MARKS	GUIDANCE
5(a) J277 1.5.1	**User management** Each vet and receptionist is given their own (user) account Each user logs in with a username and password, so the OS knows who is using the computer Access rights / permissions are set for each account / group of accounts Receptionists are given access to the appointment files but no access to the clinical notes Vets are given access to read / edit the clinical notes // a vet can be restricted to their own notes Accounts can be added / removed when staff join / leave // security, e.g. logs users off when they are away **File management** Files can be organised into (named) folders, e.g. a folder for clinical notes and one for appointments Files can be given clear / consistent names (e.g. by animal and date) so they are easy to find Files can be moved / copied into the correct folder Files can be saved / opened / deleted / renamed Access rights can be applied to a whole folder, so new notes saved there are protected too	**6**	1 mark per bullet, max 6. Max 4 if only one function is explained. Points must be applied to the practice for full marks: max 5 if no answer refers to the vets, receptionists, clinical notes or appointment files. Do not accept "more secure" / "organised" alone (NE). Do not credit encryption / defragmentation (utility software) as user or file management.

Total: 21 marks