MODULE E NETWORKS · E6

Wired vs wireless: mark scheme

20 marks · OCR J277 spec 1.3.2

How to use. 1 mark per bullet up to the maximum shown. **/** separates alternative answers; **//** separates alternative statements for the same mark. Words in (brackets) are not needed for the mark. **NE** = not enough. Spec points covered (J277 1.3.2): modes of connection (wired: Ethernet; wireless: Wi-Fi, Bluetooth); compare benefits and drawbacks of wired versus wireless connection; recommend one or more connections for a given scenario. Encryption and IP/MAC addressing (also in 1.3.2) are tested in D6/E7, not here.

QUESTION	ANSWER	MARKS	GUIDANCE
1(a) J277 1.3.2	Bluetooth: Wireless Ethernet: Wired Wi-Fi: Wireless	**3**	1 mark per correct row. 2+ ticks in a row = 0 for that row.
1(b) J277 1.3.2	The devices are close together / near each other // Bluetooth is for short-range links between nearby devices Uses low power // does not drain the phone/headphone battery quickly Easy to pair/connect the two devices No cable needed, so the driver can move freely Does not need a network/router/Wi-Fi to be available	**1**	Any one. Mark first answer only. "It's wireless" alone = NE. Credit any other valid answer.
2(a) J277 1.3.2	Walls can weaken a Wi-Fi signal: True Wired connection lets a device move freely: False Bluetooth for devices a long way apart: False	**3**	1 mark per correct row. 2+ ticks in a row = 0 for that row.
3(a) J277 1.3.2	Mobility / devices can move around (1) ... staff can carry tablets around the shop floor and greenhouses and stay connected (1) No (new) cables needed (1) ... no cost of buying/installing cables across the greenhouses // no cables to trip over / to be damaged in the greenhouses (1) Easy to add / connect new devices (1) ... extra tablets can be added without installing new cables/ports (1) Tablets may have no Ethernet port (1) ... so a wireless connection is the only way to connect them (1)	**4**	Mark in pairs: 1 for the benefit, 1 for the explanation in context. The second mark depends on the first. Do not award the same benefit twice. "Easier" / "cheaper" on its own = NE: must say what is easier or why it is cheaper. Credit any other valid answer.

QUESTION	ANSWER	MARKS	GUIDANCE
3(b) J277 1.3.2	Prone to interference (from other devices / walls / objects) (1) ... e.g. greenhouse walls/structures or other devices could weaken the signal, so the connection drops (1) Limited range (1) ... tablets far from the access point (e.g. distant greenhouses) may lose the signal (1) Slower transmission speed / lower bandwidth (1) ... stock checks / data may take longer to load (1) Less stable connection (1) ... a stock check could be interrupted (1) Signal can be picked up by anyone in range // an unauthorised person could connect to the wireless network (1) ... e.g. someone in the car park could try to access the stock data (1)	**2**	Mark in pairs as 3(a). "Slower" alone = NE: must say what is slower (e.g. transmission speed). "Less reliable" alone = NE. "Less secure" alone = NE: must say why (e.g. anyone in range can pick up the signal).
4 J277 1.3.2	Faster transmission speed / higher bandwidth // data is transferred faster More reliable / stable connection // less (prone to) interference Data cannot be picked up by anyone in range of a signal // someone would need physical access to the cable/network to connect Not affected by signal range / walls between the computer and the router	**3**	1 mark per bullet, max 3. "Faster" alone = NE: must say what is faster. "More reliable" must be linked to stability/interference for the mark. "More secure" alone = NE. Do not accept "cheaper": wired needs cables to be bought and installed.
5(a) J277 1.3.2	Wi-Fi (1) ... ... phones have no Ethernet port // guests can move around the hotel and stay connected // many guest devices can connect without cables // Bluetooth range is too short to cover the hotel (1)	**2**	The justification mark depends on the choice: Ethernet or Bluetooth = 0 for the part.
5(b) J277 1.3.2	Ethernet (1) ... ... faster transmission speed / higher bandwidth for copying large files // more stable connection, so long copies are not interrupted // the server does not move, so mobility is not needed (1)	**2**	The justification mark depends on the choice: Wi-Fi or Bluetooth = 0 for the part. "Faster" alone = NE.

Total: 20 marks