



Mark Scheme

Summer 2024 (Results)

Pearson Edexcel International Advanced
Subsidiary
In Information Technology (WIT11)
Unit 1

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|---------------------|----------|
| 1(a)(i) | <p>The only correct answer is B</p> <p>(Network-Attached Storage)</p> <p><i>A is not correct because HDMI is the High-Definition Multimedia Interface for video and audio</i></p> <p><i>C is not correct because RAID is a Redundant Array of Inexpensive Disks, where multiple hard disks are made into one logical disk</i></p> <p><i>D is not correct because SSID is Service Set Identifier, the name of a Wi-Fi network</i></p> | | 1 |

| Question number | Answer | Additional guidance | Mark |
|-----------------|--|--|----------|
| 1(a)(ii) | <p>Award one mark for any of the following:</p> <ul style="list-style-type: none"> • Work on the same document collaboratively/at the same time (1) • Use video conferencing to hold meetings (1) • Use VOIP to make (free) telephone calls (1) • Use email/shared storage to exchange/share files/data/resources (1) • Use instant messaging/chat applications to exchange messages (1) | <p>Award an example if mapped to a single bullet</p> <p>Do not award responses referring to professional communities</p> | 2 |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|--|----------|
| 1(b) | <p>Award one mark from each section:</p> <p>Positive:</p> <ul style="list-style-type: none"> • Employees could get help with problems from other community members (1) • Employees could find new/better resources to use in their own work (1) • Employees could keep up to date on new products/legislation/news (1) • Employees positively promote the image of the agency/industry/profession (1) <p>Negative:</p> <ul style="list-style-type: none"> • Employees waste time/are unproductive/are distracted (1) • Employees may find other employment opportunities (1) • Employees could give away/reveal company sensitive information (1) | <p>Do not award both marks for opposites</p> <p>Where responses are not on the correct line (e.g. negative on positive, two positives), award one mark maximum</p> | 2 |

| Question number | Answer | Additional guidance | Mark |
|-----------------|--|--|----------|
| 1(c)(i) | <p>Award up to two marks for a linked explanation such as:</p> <ul style="list-style-type: none"> • The data may be vulnerable to malicious behaviours/unauthorised access/hacking (1) because it is not stored securely (1) • The data could be shared with/sold to third parties (1) because the agency does not adhere to data-protection laws (1) • The data could be used to automate decision making (1) because the agency can create personal profiles (1) | <p>For both marks, the expansion must follow/associate with the statement.</p> <p>Do not award consent</p> | 2 |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|---|----------|
| 1(c)(ii) | Award up to two marks for a linked description such as: <ul style="list-style-type: none"> • Providing everyone with equal access to devices/data/resources (1) regardless of personal circumstances (economic / race / age / gender / disability / religion / sexual orientation / cultural beliefs) (1) • Providing special facilities for accessing IT to people (1) with personal circumstances (economic / race / age / gender / disability / religion / sexual orientation / cultural beliefs) (1) | For both marks, the expansion must follow/associate with the statement. | 2 |

| Question number | Answer | Additional guidance | Mark | | | | | | | | | | |
|--|--|---------------------|----------------|--|----------------|--|-------------|---|---------------|--|------------|--|----------|
| 1(d)(i) | Award one mark for each correct cell: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Description</th> <th>Network metric</th> </tr> </thead> <tbody> <tr> <td>A measure of the number of bits that are transferred incorrectly</td> <td>Error rate (1)</td> </tr> <tr> <td>The time delay between a data packet leaving the source device and arriving at the destination</td> <td>Latency (1)</td> </tr> <tr> <td>A measure of the capacity of a communications channel</td> <td>Bandwidth (1)</td> </tr> <tr> <td>The variation in times between packets arriving at the destination</td> <td>Jitter (1)</td> </tr> </tbody> </table> | Description | Network metric | A measure of the number of bits that are transferred incorrectly | Error rate (1) | The time delay between a data packet leaving the source device and arriving at the destination | Latency (1) | A measure of the capacity of a communications channel | Bandwidth (1) | The variation in times between packets arriving at the destination | Jitter (1) | | 4 |
| Description | Network metric | | | | | | | | | | | | |
| A measure of the number of bits that are transferred incorrectly | Error rate (1) | | | | | | | | | | | | |
| The time delay between a data packet leaving the source device and arriving at the destination | Latency (1) | | | | | | | | | | | | |
| A measure of the capacity of a communications channel | Bandwidth (1) | | | | | | | | | | | | |
| The variation in times between packets arriving at the destination | Jitter (1) | | | | | | | | | | | | |

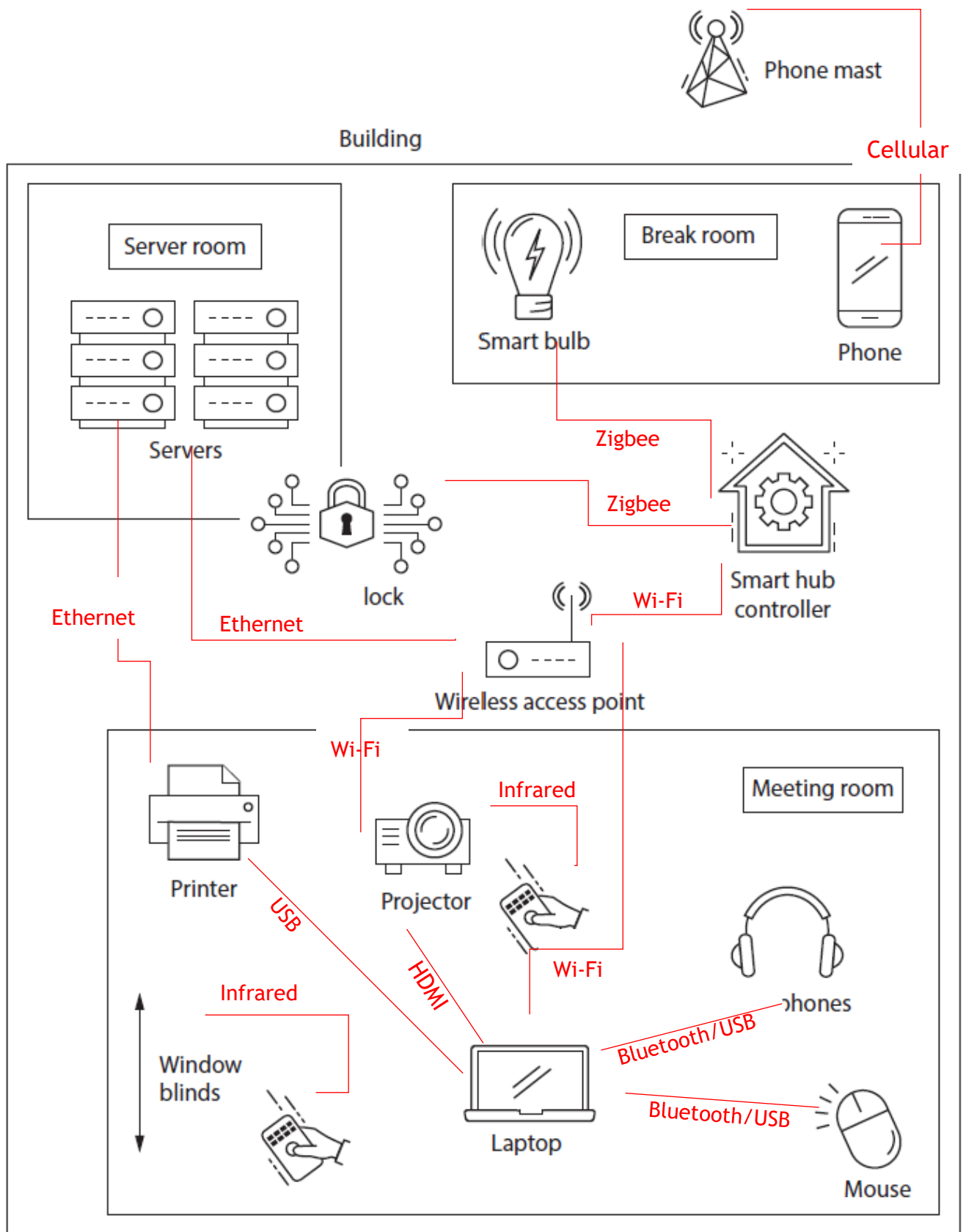
| Question number | Answer | Additional guidance | Mark |
|-----------------|--|---------------------|----------|
| 1(d)(ii) | <p>The only correct answer is D</p> <p>(Universal Resource Locator)</p> <p><i>A is not correct because E-mail is an application or a class of protocols on the Internet</i></p> <p><i>B is not correct because Routers are devices for connecting local area networks</i></p> <p><i>C is not correct because TCP/IP is a communications protocol used on the Internet</i></p> | | 1 |

| Question number | Answer | Additional guidance | Mark | | | | | | |
|--|--|---------------------|----------------------|--|---------------|--|----------------|---|----------|
| 2(a) | <p>Award one mark for each correct cell:</p> <table border="1"> <thead> <tr> <th>Description</th> <th>Encryption technique</th> </tr> </thead> <tbody> <tr> <td>The sender and the receiver use a common key to encrypt and decrypt message.</td> <td>Symmetric (1)</td> </tr> <tr> <td>The sender uses a public key to encrypt a message. The receiver uses a private key to decrypt the message.</td> <td>Asymmetric (1)</td> </tr> </tbody> </table> | Description | Encryption technique | The sender and the receiver use a common key to encrypt and decrypt message. | Symmetric (1) | The sender uses a public key to encrypt a message. The receiver uses a private key to decrypt the message. | Asymmetric (1) | <p>Do not award certificate-based in either cell</p> <p>Do not award 'private', 'shared' for 'symmetric'</p> <p>Do not award 'public' for asymmetric</p> <p>Allow symmetrical, asymmetrical</p> | 2 |
| Description | Encryption technique | | | | | | | | |
| The sender and the receiver use a common key to encrypt and decrypt message. | Symmetric (1) | | | | | | | | |
| The sender uses a public key to encrypt a message. The receiver uses a private key to decrypt the message. | Asymmetric (1) | | | | | | | | |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|---|----------|
| 2(b) | <p>Award up to two marks for a linked description such as:</p> <ul style="list-style-type: none"> • Heuristics/set of rules/set of characteristics/descriptions of behaviours (1) are applied to executing software/applications (1) • Heuristics/set of rules/set of characteristics (1) are used to identify malicious behaviours (1) • Executing programs/applications are monitored (1) to identify unusual or harmful behaviours (1) | <p>Allow examples of malicious activity as equivalent to behaviours</p> <p>Do not award sandbox</p> <p>Accept running, processing, monitoring, or equivalent for executing</p> | 2 |

| Question number | Answer | Additional guidance | Mark |
|-----------------|--|--|-----------|
| 2(c) | <p>Award up to ten marks for any of the following:</p> <ol style="list-style-type: none"> 1. Server/server room connected to wireless access point with Ethernet/802.3 label (1) 2. Printer connected to server room/laptop with Ethernet/802.3 / printer connected to laptop with USB (1) 3. Keyless smart lock connected to smart hub with ZigBee label (1) 4. Light connected to smart hub with ZigBee label (1) 5. Mobile phone connected to mobile mast with cellular/GSM/Global System for Mobile/3G/4G/5G label (1) 6. Remote control connected to projector with infrared/IrDA label (1) 7. Remote control connected to automatic blinds with infrared/IrDA label (1) 8. Laptop connected to mouse with Bluetooth/USB label (1) 9. Laptop connected to headphones with Bluetooth/USB label (1) 10. Laptop connected to wireless access point with Wi-Fi/802.11 label (1) 11. Smart hub connected to Wireless access point with Wi-Fi/802.11 label (1) 12. Laptop connected to projector with HDMI label (1) 13. Projector connected to wireless access point with Wi-Fi/802.11 label (1) | <p>Ignore 'cable' following any accurate protocol</p> <p>Do not award a mark if there is more than one line/protocol per pair of devices</p> <p>Do not award a mark if there is no protocol label on a line</p> <p>For Wi-Fi allow:</p> <ul style="list-style-type: none"> • 802.11 <p>For Ethernet allow:</p> <ul style="list-style-type: none"> • 802.3 <p>For Cellular allow:</p> <ul style="list-style-type: none"> • GSM • Global System for Mobile • Mobile • 3G/4G/5G <p>For infrared allow:</p> <ul style="list-style-type: none"> • IrDA <p>Do not award:</p> <ul style="list-style-type: none"> • Wi-Fi from the phone, as question states no wireless connection in break room <p>Allow spelling, capitalisation, and hyphenation mistakes on Wi-Fi</p> | 10 |

Example:



| Question number | Answer | Additional guidance | Mark |
|-----------------|--|------------------------------|----------|
| 2(d) | Award up to two marks for a linked description such as: <ul style="list-style-type: none"> • Tethering / creation of an ad hoc wireless access point / mobile hotspot / PAN (Bluetooth) (1) and use the phone's cellular/mobile/3G/4G network (to access the internet/the cloud) (1) | Allow broadband for cellular | 2 |

| Question number | Answer | Additional guidance | Mark | | | | | | | | | | | | | | | |
|-----------------|---|---------------------------|------|-------|--------------|---------|------------|-----------|---------|--------------|-----------|---------|----------------------|-----------|-----------|---------------------------|---|----------|
| 3(a)(i) | <p>Award one mark for each correct cell:</p> <table border="1"> <thead> <tr> <th>Table</th> <th>Key</th> <th>Field</th> </tr> </thead> <tbody> <tr> <td>tbl_employee</td> <td>Primary</td> <td>empNum (1)</td> </tr> <tr> <td>tbl_store</td> <td>Primary</td> <td>storeNum (1)</td> </tr> <tr> <td>tbl_shift</td> <td>Foreign</td> <td>store / employee (1)</td> </tr> <tr> <td>tbl_shift</td> <td>Composite</td> <td>employee, date, start (1)</td> </tr> </tbody> </table> | Table | Key | Field | tbl_employee | Primary | empNum (1) | tbl_store | Primary | storeNum (1) | tbl_shift | Foreign | store / employee (1) | tbl_shift | Composite | employee, date, start (1) | <p>Row 3: either response, but not both</p> <p>Row 4: all three items required. Do not award if 'end' is included.</p> <p>Ignore punctuation and order.</p> | 4 |
| Table | Key | Field | | | | | | | | | | | | | | | | |
| tbl_employee | Primary | empNum (1) | | | | | | | | | | | | | | | | |
| tbl_store | Primary | storeNum (1) | | | | | | | | | | | | | | | | |
| tbl_shift | Foreign | store / employee (1) | | | | | | | | | | | | | | | | |
| tbl_shift | Composite | employee, date, start (1) | | | | | | | | | | | | | | | | |

| Question number | Answer | Additional guidance | Mark |
|-----------------|--|---|----------|
| 3(a)(ii) | <p>Award up to two marks for a linked explanation such as:</p> <ul style="list-style-type: none"> The 0 at the start of the employee number would be dropped (1) because numbers/integers cannot have leading 0s / values with leading 0s must be stored as strings/characters (1) | <p>For both marks, the expansion must follow/associate with the statement.</p> <p>Do not award examples</p> | 2 |

| Question number | Answer | Additional guidance | Mark | | | | | | | | | | | | | | | | | | |
|-------------------------------|---|--|---------|--|-------|----------|----------------------|-------|---------|----------------------|----------------|----------|----------------------|---------------|---------|----------------------|-------------------------------|-------------------|--|---|----------|
| 3(b)(i) | <p>Award one mark for each of:</p> <ul style="list-style-type: none"> SELECT <field> FROM <table> (1) <table border="1" data-bbox="416 395 1303 778"> <thead> <tr> <th data-bbox="416 395 663 432"><field></th> <th data-bbox="663 395 909 432"><table></th> <th data-bbox="909 395 1303 432"></th> </tr> </thead> <tbody> <tr> <td data-bbox="416 432 663 491">title</td> <td data-bbox="663 432 909 491">tbl_book</td> <td data-bbox="909 432 1303 491">One field, one table</td> </tr> <tr> <td data-bbox="416 491 663 550">title</td> <td data-bbox="663 491 909 550">tbl_dvd</td> <td data-bbox="909 491 1303 550">One field, one table</td> </tr> <tr> <td data-bbox="416 550 663 609">tbl_book.title</td> <td data-bbox="663 550 909 609">tbl_book</td> <td data-bbox="909 550 1303 609">One field, one table</td> </tr> <tr> <td data-bbox="416 609 663 668">tbl_dvd.title</td> <td data-bbox="663 609 909 668">tbl_dvd</td> <td data-bbox="909 609 1303 668">One field, one table</td> </tr> <tr> <td data-bbox="416 668 663 778">tbl_book.title, tbl_dvd.title</td> <td data-bbox="663 668 909 778">tbl_book, tbl_dvd</td> <td data-bbox="909 668 1303 778">Same field name from two different tables. Must be in matching order</td> </tr> </tbody> </table> <ul style="list-style-type: none"> Sight of UNION (1) <p>Example:</p> <pre>SELECT title FROM book_table UNION SELECT title FROM dvd_table;</pre> | <field> | <table> | | title | tbl_book | One field, one table | title | tbl_dvd | One field, one table | tbl_book.title | tbl_book | One field, one table | tbl_dvd.title | tbl_dvd | One field, one table | tbl_book.title, tbl_dvd.title | tbl_book, tbl_dvd | Same field name from two different tables. Must be in matching order | <p>Ignore transcription errors</p> <p>Ignore inclusion or omission of semi-colon (;)</p> <p>Ignore capitalisation</p> <p>Allow <i>title</i>, <i>title</i> for <field> although it is ambiguous, because the table name is unknown</p> <p>Allow UNION ALL for UNION, although it will produce duplicates</p> | 2 |
| <field> | <table> | | | | | | | | | | | | | | | | | | | | |
| title | tbl_book | One field, one table | | | | | | | | | | | | | | | | | | | |
| title | tbl_dvd | One field, one table | | | | | | | | | | | | | | | | | | | |
| tbl_book.title | tbl_book | One field, one table | | | | | | | | | | | | | | | | | | | |
| tbl_dvd.title | tbl_dvd | One field, one table | | | | | | | | | | | | | | | | | | | |
| tbl_book.title, tbl_dvd.title | tbl_book, tbl_dvd | Same field name from two different tables. Must be in matching order | | | | | | | | | | | | | | | | | | | |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|--|----------|
| 3(b)(ii) | <p>Award one mark for each of:</p> <ul style="list-style-type: none"> • SELECT <count> FROM tbl_book (1) <ul style="list-style-type: none"> ○ count(*) ○ count() • WHERE published >= '1965-01-01' (1) <p>Example:</p> <pre>SELECT count(*) FROM tbl_book WHERE published >= '1965-01-01'</pre> | <p>Ignore transcription errors</p> <p>Ignore inclusion or omission of semi-colon (;)</p> <p>Ignore capitalisation</p> <p>Field name (published) must not have quote marks or other delimiters</p> <p>Date expression must include year, month, and day</p> <p>Allow symbols for >=:</p> <ul style="list-style-type: none"> • > • ≥ <p>Allow other date formats and delimiters:</p> <ul style="list-style-type: none"> • > '1964-12-31' • > '31-12-1964' • > #31-12-1964# • >= 12-31-1965 <p>Count must have brackets, as it is a function, but ignore contents of the brackets</p> | 2 |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|---|----------|
| 3(c) | <p>Award up to two marks for a linked explanation such as:</p> <ul style="list-style-type: none"> Compare prices of goods to other vendors/online businesses / obtain instant vouchers from the bookstore / read book reviews online / scan QR code on physical book for information (1) because customers could use the city's (high-speed) Wi-Fi / can access the city's Internet (1) | <p>For both marks, the expansion must follow/associate with the statement.</p> <p>Do not award responses for payments of any kind</p> | 2 |

| Question number | Indicative content. | Mark |
|-----------------|--|----------|
| 3(d) | <p>Open source</p> <ul style="list-style-type: none"> • Open source software is usually free, so there would be no monetary charge. • The owner of the bookstore would be able to download, maintain, and amend the source code to suit her needs. • The owner of the bookstore could base a new product on the open source code, which she would be able to sell to other bookstore owners. • Open source software is supported by a community of developers, even big corporations contribute, e.g. Linux operating system • Some technical support may be available if the owner has difficulties or finds bugs, but that support is not guaranteed. • Support is provided by the community in the forms of tutorials and videos. • Open source is not limited to a pre-set number of licences/users. • Format of open source files/outputs may not be readable by proprietary software, but many do allow open/save into multiple formats. <p>Proprietary</p> <ul style="list-style-type: none"> • Proprietary software is closed source/not modifiable. • The software is sold under licence/as a subscription. • Each device might need a separate licence/subscription. • The actual software remains the property of the writer/company. • Usually, technical support is available for proprietary software, so the owner may have access to a helpline or online knowledge bases provided by the vendor. • Many people worldwide use proprietary software, so the owner could find websites with hints/tips that will help her. • The owner may be able to take a course in how to use the proprietary software because many local colleges/training centres/online tutorials provide courses. | 6 |

| Level | Mark | Descriptor |
|--------------|-------------|--|
| | 0 | No rewardable material. |
| Level 1 | 1-2 | <ul style="list-style-type: none"> • Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a response that lacks development. |
| Level 2 | 3-4 | <ul style="list-style-type: none"> • Demonstrates knowledge and understanding, which is mostly relevant and may include some inaccuracies. • Applies understanding to make some coherent connections and a partially developed response. |
| Level 3 | 5-6 | <ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response. |

Example:

Open source – likely to be cheaper, as there is no fee to pay to buy/use it. The applications can usually open and save outputs by proprietary software, such as standard office applications. You don't have to keep track of the number of licences either. It is maintained by a community of developers, sometimes including big corporations. There is usually no dedicated support team, so reporting errors and getting updates may be an issue. Because there is a community around the software, there may be support in the form of books, videos, and tutorials available online. The bookstore owner could join the community and change/amend the code herself.

Proprietary software – you must pay a fee to use it, perhaps licences or subscriptions. There is usually good documentation for the buyer. The vendor may publish books and run courses. They may have a dedicated support line for people to contact if they have a problem. The owner cannot change the source code, because it is owned and locked by the vendor.

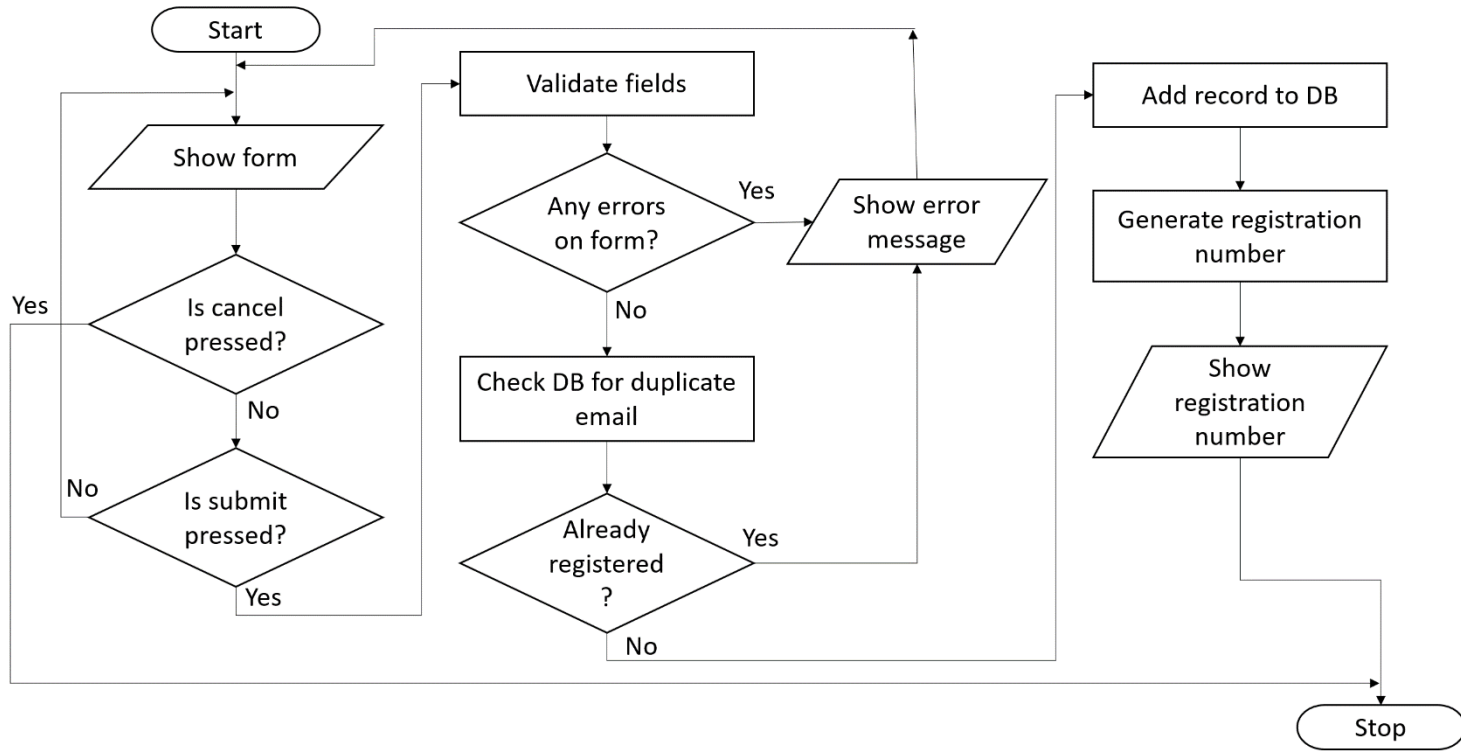
| Question number | Answer | Additional guidance | Mark |
|-----------------|--|--|----------|
| 4(a) | <p>Award one mark for any of the following up to a maximum of two:</p> <ul style="list-style-type: none"> • Meet all the agreed criteria (set out at the analysis/requirements/design phase) (1) • Passes a set of tests, agreed before system development starts (1) <ul style="list-style-type: none"> ○ Test plan ○ Usability tests / suits the targeted audience ○ Accessibility tests ○ Security tests | <p>Allow customer/user, etc. for target audience</p> <p>Do not award responses based on user opinion/agreement</p> | 2 |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|---------------------|----------|
| 4(b) | <p>Award two marks for any of the following:</p> <ul style="list-style-type: none"> • A cookie (from the professional community) is stored on the carpenter's PC (1) • When the carpenter logs on, (traits associated with) the cookie (location, preferences, profession) are sent to a 3rd party advertisement provider (1) • Advertisements are found that match the carpenter's cookie (traits, such as profession/location/specialism) (1) • The advertisement links are sent back to the professional community's web server (for inclusion on the page sent to the carpenter's PC) (1) | | 2 |

| Question number | Answer | Additional guidance | Mark |
|-----------------|--|--|----------|
| 4(c) | <p>Award up to two marks for a linked explanation such as:</p> <ul style="list-style-type: none"> • The 'Ad' symbol appears near the hyperlink (1) because the advertiser pays the owner/publisher of the web page/search engine to show the link (1) • Advertisers pay the publisher/search engine (1) because the plumber clicks on the advertisement hyperlink (1) | <p>For both marks, the expansion must follow/associate with the statement.</p> <p>Do not award pay-per-click alone</p> <p>Do not award rank ordering of search results</p> | 2 |

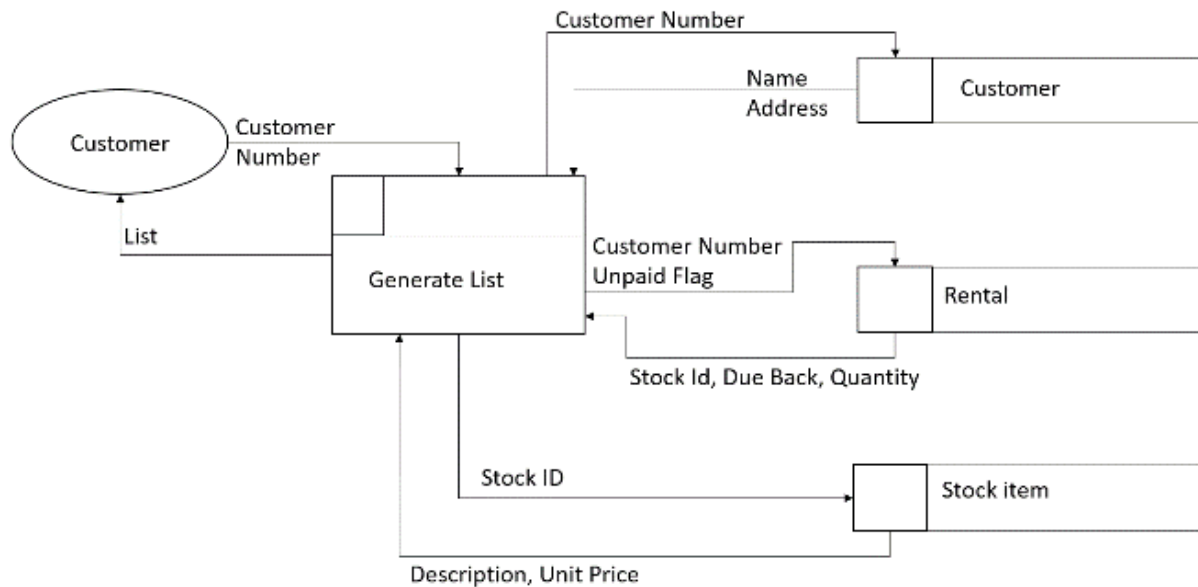
| Question number | Answer | Additional guidance | Mark |
|-----------------|---|---|------|
| 4(d) | <p>Award one mark for any of the following:</p> <p>Logic of the problem</p> <ul style="list-style-type: none"> • Show the form/Accept three inputs (1) • Cancel and submit handled (any order) (1) • Fields validated, errors indicated, return to show form/accept three inputs (1) • Check database for duplicate email and handled with error message, return to show form (1) • Handling a new registration by adding record to database, generating registration number and returning the new registration number to the customer (1) <p>Use of annotation regardless of logic</p> <ul style="list-style-type: none"> • Accurate use of flowchart notation (Appendix 7) throughout (1) <ul style="list-style-type: none"> ○ Have a start and a stop symbol ○ Decision boxes have exactly one input, exactly two outputs with yes/no labels ○ Fully connected with arrows/lines (no hanging symbols) | <p>Award generation of registration number by any method.</p> <p>Adding a record to the database may be done before/after generation of registration number.</p> <p>Ignore closing form if provided.</p> <p>Cancel button and submit button checks could be in a different order.</p> <p>Allow badly drawn parallelograms, if at least one can be distinctly identified</p> <p>Allow follow through for annotation bullet, when missing one of the other bullets is the ONLY reason for missing Bullet 6</p> | 6 |

Example:



| Question number | Answer | Additional guidance | Mark |
|-----------------|--|---------------------|------|
| 4e | <p>Award one mark for any of the following:</p> <ul style="list-style-type: none"> • Sight of Customer data store (1) • Sight of Stock Item data store (1) • One accurate output from Rental data store, even if in the wrong symbol (1) <ul style="list-style-type: none"> • One accurate output from Customer/Stock data store (1) <p>OR</p> <ul style="list-style-type: none"> • Sight of one process symbol with a label describing any new process appropriate to context (1) | | 4 |

Example:



| Question number | Answer | Additional guidance | Mark |
|-----------------|---|---|----------|
| 5(a)(i) | <p>Award up to two marks for a linked explanation such as:</p> <ul style="list-style-type: none"> • Ground water may be polluted (1) because waste water from chip production is released without treatment (1) • The landscape may be scarred / wildlife habits lost (1) because of raw material / mineral extraction (1) • Drought may be induced in areas (1) because large amounts of water are extracted for chip production (1) • Non-renewable resources/rare-earth metals (lithium) may be depleted (1) because of mining/extraction (1) | <p>Do not award responses referencing CO₂, energy production, global warming, or climate change, as it is given in the stem.</p> <p>Allow examples of minerals/metals, e.g. indium</p> | 2 |

| Question number | Answer | Additional guidance | Mark |
|-----------------|---|---|----------|
| 5(a)(ii) | <p>Award up to two marks for a linked explanation such as:</p> <ul style="list-style-type: none"> • Land and water may be contaminated (1) because devices/chemicals/batteries/PCBs are disposed in a landfill / dumped (1) • Air may be polluted/chemicals released into the air (1) because plastic components are burned (1) • Fires may be started (in landfills) (1) because batteries may explode in the heat/when damaged • Oceans may be contaminated (1) because plastics break down in water to microplastics/plastics are disposed of in/near water (1) | <p>Do not award responses referencing CO₂, energy production, or climate change, as it is given in the stem.</p> | 2 |

| Question number | Indicative content | Additional guidance | Mark |
|-----------------|---|--|-----------|
| 5(b) | <p>Biometrics</p> <ul style="list-style-type: none"> As biometrics are mostly used for security purposes, there is no real reason to include them in this device for a child. Training the child to use a biometric device, like a fingerprint reader, to access the device could be difficult. There is no secure content on the device, as all the applications are dedicated, so user identification may not be needed. Biometrics used for user identification could make the device less likely to be stolen. Biometric recognition of the parent could be used so that the parent can control the screen time of the child. Biometrics could be used to prevent unauthorised use of the device <p>Touchscreen</p> <ul style="list-style-type: none"> A child could not use a keyboard, even a chunky one, very well, so a touchscreen should be included. The learning applications probably only use non-text icons, like arrows or buttons, anyway, as a young child may not read letters. A child may well be familiar with the swiping motion from other devices, like a phone. <p>Amount of memory</p> <ul style="list-style-type: none"> A learning application, aimed at a child, probably is not a very big program, when compared to something like a game. The operating system running the learning device only has a few tasks to perform, so should not need a large amount of memory. | <p>Do not award:</p> <ul style="list-style-type: none"> Cost of technology Environmental impact Benefits/drawbacks of using the device, rather than of the technologies <p>The growth of a child does not disallow the use of biometrics. Although bodies change with age, a child's biometric features will not change in the short lifespan of this device.</p> | 12 |

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|--|---|--|--|
| | <ul style="list-style-type: none"> • The learning applications themselves are probably simple, with the most memory used by graphics or images. <p>Amount of secondary storage</p> <ul style="list-style-type: none"> • The number of applications that need to be stored on the device will vary across time, so too little storage means that fewer applications can be stored. • As a child will outgrow the device in a few years, the device would not need to store many applications. • Once a child has mastered the content of a learning application, it can be removed anyway, providing room for more challenging content. • Only an adult should be able to install applications on the device, so the same adult could delete old applications to make room for the new ones. <p>Power source</p> <ul style="list-style-type: none"> • As a child is very active, a battery will need to be included, to support portability. • Providing only mains power would not be suitable as a child does not sit still for very long. • As a child will not be using the device for very long at one time, the battery does not have to last very long. An hour or two would be sufficient. • As a child may leave the device powered up, battery may need to be rechargeable. <p>Miniaturisation</p> <ul style="list-style-type: none"> • The smallest format components should be used, as a child's hands are small. • Children will not be able to pickup heavy components, so smaller components | | |
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| | <p>will weigh less.</p> <ul style="list-style-type: none">• Children do not have good motor skills, so if the components are too small, they may not be usable.• Keeping all components small means that the child will be able to pick up the device, to use it while travelling <p>Conclusion</p> <ul style="list-style-type: none">• There is no correct conclusion.• Conclusions should be supported by arguments in the rest of the answer.• Conclusions do not have to be explicitly stated, but may be inferred from the argument. | | |
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| Level | Mark | Descriptor |
|--------------|-------------|--|
| | 0 | No rewardable material. |
| Level 1 | 1–4 | <ul style="list-style-type: none"> • Demonstrates limited knowledge and understanding, some of which may be inaccurate. • Applies understanding with limited coherence to produce a response that lacks development. • Demonstrates limited awareness of competing arguments. Conclusion, if present, is generic or unsupported. |
| Level 2 | 5–8 | <ul style="list-style-type: none"> • Demonstrates knowledge and understanding, which is mostly relevant and may include some inaccuracies. • Applies understanding to make some coherent connections and a partially developed response. • Demonstrates some awareness of competing arguments, but this may be unbalanced, and partially supports conclusion with evidence. |
| Level 3 | 9–12 | <ul style="list-style-type: none"> • Demonstrates accurate and relevant knowledge and understanding throughout. • Applies understanding coherently to produce a fully developed response. • Demonstrates an awareness of competing arguments and supports conclusion with evidence. |

Example:

Biometrics - can ensure user is a particular child and mean the device is less attractive for a thief. A child might not even be able to use a biometric device accurately. However, using the parent's fingerprint could be used to control the child's screen time.

Touchscreen - could be included which would mean no keyboard is needed. If the child cannot yet read, then the device should not need language skills anyway. Big symbols displayed on a touchscreen might be better, as children don't have very fine motor skills.

Memory - probably limited system memory is required. The applications are written especially for the dedicated machine, so will be quite efficient. The applications are not likely to be very complicated or require very fast memory.

Secondary storage - again will be limited to storing responses from the child and recording previous interactions. These activities are not likely to generate large files so secondary storage can be limited. However, a solid-state device would be more suitable than a magnetic one, as a child might drop the device.

Power source - obviously the device should be powered by rechargeable batteries. This is for both safety and convenience, as it wouldn't be safe for a child to be attached to a power socket or have a cord dangling around for the child to trip over. This will also mean the device is more portable.

Miniaturisation - small case and light weight so suitable for a child. But, it can't be too small as a child will not have very well-developed motor skills. If it's too small, then the child won't be able to use it accurately.

