

Solutions

Each answer shows the steps, then the **result**.

2.1

- a high-level language is closer to English than machine code
- any **one** of: **easy to read/write/fix** / **independent of the computer**

2.2

- any **two** of: code editor / run-time environment / translator / error diagnostics / auto-completion / prettyprinting

2.3

- any **two** of: examines traffic in and out / compares traffic with criteria and blocks failures / keeps a log / blocks named sites or IP addresses

2.4

- the request goes to the **proxy first**, and the proxy sends it on
- the website sees the **proxy's address**, so the user's IP is hidden

2.5

- e.g. a virus on a **memory stick**, or a user giving a password to a **phishing** message
- the firewall only inspects traffic at the **network boundary**, so it never sees these

3.1 B

- a compiler translates the **whole program at once**
- A is an interpreter; C and D are wrong

3.2

(a)

- **interpreter**
- it **stops at the first error**, which helps find mistakes while testing

(b)

- any **two** of: compiler all at once / interpreter line by line; compiler reports all errors at the end / interpreter stops at the first; compiled program runs faster; interpreter needed each time it runs

3.3

(a)

- any **three** of: examines traffic in and out / compares with criteria / blocks failures / logs traffic / blocks named sites or IP addresses

(b)

- any **two** of: caches web pages / hides the user's IP / filters unwanted websites

(c)

- a firewall only inspects traffic at the **network boundary**
- it cannot stop malware on a **memory stick**, or a user who gives away a password

(d)

- **https** / padlock means **SSL/TLS**, so the data is **encrypted**
- an interceptor sees only ciphertext, so log-in and payment details are protected

(e)

- any **one** of: who can see the profile / whether location is shared / whether the account appears in search
- if left open, strangers can gather personal information for **social engineering or identity theft**