Answer Keys & Grading Notes

Objective-aligned exemplars, full-credit models, and the mistakes to watch for. **Do not distribute to students.**

True-up step: the objective sections below are built from the AP learning objectives. Paste your real Code.org prompts into chat and I'll fill exact question-by-question keys. The *AI-Proof Worked Answers* section matches the handwritten assignment exactly.

A · Protocols & packets

Term	Mastery answer
`Protocol`	An agreed set of rules for formatting/transmitting data (e.g., TCP/IP, HTTP).
`Packet`	A small chunk of data with a header (addresses, order) that travels independently.
`IP address`	A unique numeric address identifying a device on a network.
`DNS`	Translates human-readable domain names into IP addresses.

Common mistakes: Saying the whole message travels as one piece (it's split into packets); confusing IP with DNS; thinking a protocol is a device.

B · Redundancy, fault tolerance & routing

Full-credit exemplar: Redundancy = multiple paths between points; fault tolerance = the network keeps working if part fails because packets reroute. This is why the Internet is reliable at scale.

Common mistakes: Confusing redundancy (extra paths) with backup files; not connecting redundancy → fault tolerance.

C · Bandwidth vs. latency

Full-credit exemplar: Bandwidth = amount of data per unit time (capacity); latency = delay before transfer begins. High bandwidth doesn't fix high latency.

Common mistakes: Using 'bandwidth' and 'speed' interchangeably; thinking latency = bandwidth.