3. Hardware

Starter Quiz ·

A-Level Computer Science Name: _____ Score: _____

1. Which of these is an input device?

   ☐ a speaker

   ☐ a printer

   ☐ a monitor

   ☐ a scanner

2. How does an SSD differ from a magnetic hard disk?

   ☐ it stores data as pits read by a laser

   ☐ it has no moving parts and gives faster random access

   ☐ it uses spinning platters

   ☐ it is always cheaper per gigabyte

3. Which statement is true?

   ☐ RAM is volatile; ROM is non-volatile

   ☐ RAM is non-volatile; ROM is volatile

   ☐ both are volatile

   ☐ both are non-volatile

4. The key difference between a monitoring system and a control system is that a control system:

   ☐ has no sensors

   ☐ cannot read temperature

   ☐ acts on the data through actuators, not just reports it

   ☐ only logs readings

5. A NOT gate outputs 1 when its input is 0.

   ☐ True ☐ False

6. For $X = (A \cdot B) + \overline{C}$ with $A = 1, B = 1, C = 1$, what is X?

   ☐ 0

   ☐ 1

   ☐ 2

   ☐ cannot tell

7. RAM is volatile (its contents are lost without power), while secondary storage keeps data when the power is off.

   ☐ True ☐ False

8. A 3D printer builds an object one _____ at a time, each bonding to the one below.

   _____

9. A computer with more RAM holds more programs and data at once, so it swaps less between memory and _____, so it runs faster.

   _____

10. A pure monitoring system takes action through actuators to change its environment.

    ☐ True ☐ False

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Answers ·

A-Level Computer Science

1. **a scanner**

   A scanner brings data in. Monitors, speakers and printers are output devices.

2. **it has no moving parts and gives faster random access**

   SSDs store charge in flash transistors – no moving parts, faster and tougher, but dearer per GB and cells wear out.

3. **RAM is volatile; ROM is non-volatile**

   RAM loses its contents without power (volatile); ROM keeps them (non-volatile).

4. **acts on the data through actuators, not just reports it**

   Both read sensors, but a control system uses the data to act (via actuators), while monitoring only collects and reports.

5. **True**

   NOT inverts: $0 \to 1$ and $1 \to 0$.

6. **1**

   $A \cdot B = 1$, and $\overline{C} = 0$. $X = 1 + 0 = 1$.

7. **True**

   That is why your work must be saved to storage – RAM only holds it while the computer is on.

8. **layer**

   Slicing software cuts the model into thin horizontal layers; the printer deposits, cures or fuses one layer at a time.

9. **disk**

   When RAM is full the operating system moves pages out to secondary storage and back, and every swap is thousands of times slower than a memory access.

10. **False**

    Monitoring only collects and reports data – it does not act. Acting through actuators is what makes it a control system.