

6. Automated and emerging technologies

Starter Quiz ·

IGCSE Computer Science

Name: _____ Score: _____

1. An automated system is one that:
 - ☐ cannot take any action without a keyboard command
 - ☐ senses and responds to its environment with no human intervention
 - ☐ needs a person to make every decision it carries out
 - ☐ has no sensors, so it repeats one fixed action
2. Which is a defining characteristic of a robot?
 - ☐ it has no moving parts and works only with software
 - ☐ it thinks for itself without following instructions
 - ☐ it follows programmable instructions that can be changed
 - ☐ it can never be reprogrammed once it has been built
3. Artificial intelligence is:
 - ☐ a type of hardware fitted inside modern computers
 - ☐ the simulation of human intelligence by computer systems
 - ☐ a network protocol that lets computers share data
 - ☐ any computer program at all, however simple its instructions
4. In an automated system, the microprocessor:
 - ☐ measures the temperature directly with its own sensor
 - ☐ compares sensor data with stored values and makes decisions
 - ☐ opens a window by turning a motor itself
 - ☐ displays the data on a screen for a person to read
5. Which is a typical use of a robot?
 - ☐ writing a novel from scratch with original ideas
 - ☐ making moral judgements about people's behaviour
 - ☐ welding car parts on a production line
 - ☐ deciding a company's strategy from its sales figures
6. All AI in use today is narrow AI (good at one specific task); strong AI, with human-like self-awareness, does not yet exist.
 - ☐ True ☐ False

7. Automated systems can work 24/7 consistently and safely in dangerous places, but they cost more to set up and cope badly with unexpected situations.

☐ True ☐ False

8. A robot uses actuators to gather data and sensors to act on its surroundings.

☐ True ☐ False

9. Which is a characteristic of an AI system?

☐ it never changes its behaviour once it has been programmed

☐ it can learn from data and adapt its behaviour

☐ it stores no data, so it treats every input as new

☐ it cannot use rules, only random choices

10. An advantage of using robots is that they:

☐ do dull or dangerous jobs quickly and accurately, without tiring

☐ are always cheaper to buy and install than paying human workers

☐ never need maintenance, repairs or software updates

☐ can react sensibly to any new situation they meet

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Answers ·

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1. senses and responds to its environment with no human intervention

Automated systems work on their own, sensing data and acting on it.

2. it follows programmable instructions that can be changed

A robot has a physical body, electronics, and a changeable program – it can be reprogrammed for a new job.

3. the simulation of human intelligence by computer systems

AI is a computer doing tasks that normally need human thinking.

4. compares sensor data with stored values and makes decisions

The microprocessor decides; the sensor measures and the actuator acts.

5. welding car parts on a production line

Robots excel at repetitive physical tasks like welding or vacuuming; they don't make independent judgements.

6. True

A chess engine or a recommender is narrow AI; a self-aware, general mind (strong AI) remains theoretical.

7. True

Consistency and safety are the strengths; setup cost and inflexibility (no judgement for the unexpected) are the trade-offs.

8. False

False. Sensors gather data and actuators, such as motors, act on the surroundings: sense, process, then act.

9. it can learn from data and adapt its behaviour

AI collects data + rules, reasons, draws conclusions, learns and adapts.

10. do dull or dangerous jobs quickly and accurately, without tiring

Robots are fast, accurate and tireless on dull/dangerous tasks, though they are costly and inflexible.