

Robotics Fundamentals

Robotics · Answer Key · 12 Questions

1. What is the term for the branch of engineering and computer science that deals with the design, construction, operation, and application of robots?

- A) Cybernetics
- B) Artificial Intelligence
- C) Robotics**
- D) Mechatronics

2. Which of the following is a primary function of a robot's manipulator, often referred to as an 'arm' or 'hand'?

- A) To provide sensory input
- B) To house the power source
- C) To actuate movement and interact with the environment**
- D) To process information and make decisions

3. The 'end effector' of a robot is typically attached to the manipulator and is responsible for:

- A) Controlling the robot's locomotion
- B) Performing the specific task the robot is designed for**
- C) Processing sensor data
- D) Providing communication signals

4. What type of robot is commonly used in manufacturing assembly lines for repetitive tasks like welding, painting, and pick-and-place operations?

- A) Humanoid robots
- B) Autonomous underwater vehicles (AUVs)
- C) Industrial robots**
- D) Service robots

5. Which of the following is a common type of actuator used to provide rotational or linear motion in robots?

- A) Capacitor
- B) Resistor
- C) Inductor
- D) Motor**

6. What does the term 'Degrees of Freedom' (DOF) refer to in the context of robotics?

- A) The number of sensors on a robot
- B) The number of independent ways a robot's manipulator can move**
- C) The amount of data a robot can process
- D) The robot's operating system version

7. The ability of a robot to perceive its environment and respond appropriately is largely dependent on its:

- A) Power supply
- B) Actuation system
- C) Control system and sensors**
- D) Physical chassis material

8. Which historical figure is often credited with popularizing the term 'robot' in his 1920 play R.U.R. (Rossum's Universal Robots)?

- A) Isaac Asimov
- B) Nikola Tesla
- C) Karel Capek**
- D) Leonardo da Vinci

9. What is a common programming paradigm for controlling robot behavior, which involves a sequence of instructions that the robot executes?

- A) Machine Learning
- B) Algorithmic programming**
- C) Event-driven programming
- D) Logic programming

10. Robots designed to assist humans in tasks such as cleaning, elderly care, or delivering goods in a hospital are generally classified as:

- A) Industrial robots
- B) Autonomous robots
- C) Service robots**
- D) Teleoperated robots

11. What is the primary role of a robot's power source?

- A) To process sensory input
- B) To enable movement and operation of its components**
- C) To communicate with other systems
- D) To provide structural support

12. Which scientific field directly contributed to the development of the computational and decision-making abilities of modern robots?

- A) Genetics
- B) Astronomy
- C) Computer Science**
- D) Geology