



Certified Robotics Systems Professional (CRSP)

Ten Sample Questions

These ten questions are written at the difficulty of the live exam. Six carry a figure, a data table, a configuration or a code listing; four are plain scenario questions, as on the live paper. Every one is a scenario a working robotics systems professional would meet, and none of them appears in the live question bank.

The live exam is multistage adaptive: how you score on one stage selects the difficulty of the next, so no two candidates sit the same paper. It is a performance-based exam: each form can carry up to 5 to 12 performance-based questions alongside the multiple-choice questions, which means you build, sequence or complete something rather than only choosing from a list. Answers and full explanations follow each question here; the live exam does not disclose item-level answers.

Question 1

Domain 1: Robotics Foundations

DATA

Sarah Miller maps each robot subsystem to its role, with one subsystem missing.

Subsystem	Role
Sensing	Perceive surroundings
(to choose)	Decide and command
Actuation	Produce motion
Power	Supply energy

Table 1.1 Subsystems and roles.

Which subsystem fills the blank?

- ☐ A Chassis frame
- ☐ B Battery pack
- ☐ C Controller
- ☐ D End effector

Correct answer: C

The controller is the subsystem that decides and issues commands based on sensor data. Sensing perceives, actuation produces motion, and power supplies energy, so none of those fills the deciding role.

Question 2

Domain 2: Sensors and Actuators

DATA

James Carter maps each sensor to what it measures, with one sensor missing.

Sensor	Measures
Encoder	Joint position
(to choose)	Distance to object
IMU	Orientation and rate
Force sensor	Contact force

Table 2.1 Sensors and readings.

Which sensor measures distance to an object?

- ☒ A Ultrasonic sensor
- ☐ B Rotary potentiometer
- ☐ C Microphone
- ☐ D Light meter

Correct answer: A

An ultrasonic sensor sends a pulse and times the echo, so it measures distance to a nearby object. A potentiometer reads angle, a microphone reads sound, and a light meter reads brightness, so none of those returns distance.

Question 3

Domain 3: Kinematics and Motion

DATA

Emma Wilson maps each joint type to its motion, with one motion missing.

Joint type	Motion
Revolute	Rotation about axis
Prismatic	(to choose)
Spherical	Three rotations
Fixed	No motion

Table 3.1 Joint types and motion.

What motion does a prismatic joint give?

- ☒ A Free rotation
- ☐ B Bending twist

- ☐ C Random drift
- ☐ D Linear slide

Correct answer: D

A prismatic joint moves along a straight axis, so it gives a linear slide. Revolute and spherical joints rotate, while a fixed joint allows no motion, so none of the rotation choices fits a prismatic joint.

Question 4

Domain 4: Control Systems

CONFIG

David Brown reads a simple control loop that a small arm runs each cycle.

```
read setpoint
read sensor value
error = setpoint - value
output = Kp * error
send output to motor
```

Listing 4.1 A simple control loop.

Which line applies the proportional gain to the error?

- ☐ A read sensor value
- ☐ B output = Kp * error
- ☐ C read setpoint
- ☐ D send output to motor

Correct answer: B

The line output = Kp * error multiplies the error by the gain Kp, which is the proportional action. The other lines read a value or send the result, so they do not apply the gain.

Question 5

Domain 5: Programming and Integration

CONFIG

Olivia Davis reviews the controller I/O map, where DI is an input and DO is an output.

```
DI emergency stop button
DI part present sensor
DO gripper open
DO conveyor run
AO speed command
```

Listing 5.1 Controller I/O map.

Which entry is an input the program reads?

- ☐ A DO gripper open
- ☐ B DO conveyor run
- ☐ C DI stop button

D AO speed set

Correct answer: C

The DI lines are digital inputs the program reads, so DI stop button is an input. The DO lines drive the gripper and conveyor as outputs, and the AO line writes a command, so those are not inputs.

Question 6

Domain 6: Safety, Testing and Operations

DATA

Liam Anderson maps each safety control to its purpose, with one control missing.

Control	Purpose
Emergency stop	Halt all motion fast
(to choose)	Fence off the cell
Light curtain	Stop on entry
Lockout tag	Isolate energy

Table 6.1 Safety controls and purpose.

Which control fences off the cell?

- A** Safety fence
- B** Warning label
- C** Status light
- D** User manual

Correct answer: A

A safety fence is a physical barrier that keeps people out of the moving cell. A label, a status light, and a manual give information but do not physically fence off the area.

Question 7

Domain 1: Robotics Foundations

A new operator calls any machine that follows a fixed program a robot, even a device that cannot sense or adjust to its surroundings. What key trait defines a robot?

- A** It is very fast
- B** It is painted bright
- C** It runs on mains power
- D** It senses and acts

Correct answer: D

A robot senses its surroundings and acts on them, which sets it apart from a fixed machine that cannot adjust. Speed, colour, and power source do not define a robot, since a robot can be slow, plain, or battery driven.

Question 8

Domain 2: Sensors and Actuators

A gripper motor keeps stalling because it has no way to tell how far it has turned, so the controller cannot correct its position. What addition fixes this?

- ☐ A A louder buzzer
- ☐ B An encoder
- ☐ C A bigger battery
- ☐ D A wider base

Correct answer: B

An encoder reports how far the motor has turned, so the controller can measure and correct the position. A buzzer, a bigger battery, or a wider base add no position feedback, so they do not solve the problem.

Question 9

Domain 4: Control Systems

A heater arm overshoots its target angle and then swings back and forth before it settles, wasting time each cycle. What tuning change reduces the overshoot?

- ☐ A Add damping gain
- ☐ B Remove all feedback
- ☐ C Raise the setpoint
- ☐ D Cut the power off

Correct answer: A

Adding a damping gain slows the approach so the arm settles without swinging past the target. Removing feedback, raising the setpoint, or cutting power does not calm the overshoot and can make control worse.

Question 10

Domain 6: Safety, Testing and Operations

Before a technician reaches into a robot cell to clear a jam, the team wants to be sure the arm cannot move unexpectedly. What step best protects the technician?

- ☐ A Work quickly
- ☐ B Dim the room lights
- ☐ C Lock out the power
- ☐ D Trust the software

Correct answer: C

Locking out the power isolates the energy so the arm cannot move while the technician works inside the cell. Working quickly, dimming lights, or trusting the software leaves the arm able to move and does not remove the hazard.

