CERTLABZ CERTIFICATION BOARD

Certified Autonomous Systems Professional (CAUP)

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 autonomous 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: Autonomous Systems Foundations — DATA

Sarah Miller reviews the autonomy pipeline stages, with one stage description missing.

Stage	Role
Sense	Gather sensor data
Perceive	(to choose)
Plan	Choose a path
Act	Drive the motors

Table 1.1 Pipeline stages and roles.

What is the role of the perceive stage?

A. Charge the battery
B. Interpret the data
C. Print a log file
D. Sign off on the plan

Correct answer: B
The perceive stage interprets raw sensor data into a model of the world, such as objects and free space. Sensing gathers the data, planning chooses a path, and acting drives the motors, so the missing role is to interpret the data.

Question 2 Domain 2: Perception and Sensing DATA

James Carter compares common sensors, where one strength entry is missing.

Sensor	Strength
Camera	Rich color detail
Lidar	(to choose)
Radar	Works in fog
Ultrasonic	Close range cost

Table 2.1 Sensors and strengths.

What is a key strength of lidar?

A. Reads text signs
B. Hears the engine noise
C. Accurate range map
D. Free to operate

Correct answer: C
Lidar sends laser pulses and times their return, producing an accurate three dimensional range map of the scene. Cameras give color detail and radar sees through fog, but neither builds the dense depth map that lidar provides.

Question 3 Domain 3: Localization and Mapping DATA

Olivia Davis reads a small occupancy grid, where each cell shows its state.

Cell	State
A1	Free
A2	Occupied
A3	Unknown
A4	Free

Table 3.1 Occupancy grid cells.

Which cell should the robot avoid driving into?

A. A2
B. A1

C A4

D A3

Correct answer: A
An occupancy grid marks each cell as free, occupied, or unknown, and cell A2 is occupied by an obstacle. The robot plans through free cells like A1 and A4 and treats unknown cells with caution, so it avoids A2.

Question 4

Domain 4: Path Planning and Navigation

CONFIG

Liam Anderson reads the steps a grid path planner follows to reach the goal.

```
start at robot cell
expand nearest open cell
score by cost plus guess
stop when goal reached
trace path back to start
```

Listing 4.1 Planner steps.

What does the score combine at each cell?

A Cost and estimate

B Speed and the weight

C Battery and heat

D Color and shape

Correct answer: A
A heuristic planner scores each cell by the cost so far plus an estimate of the cost to the goal, guiding the search toward the target. It expands the most promising cells first, so the score combines cost and estimate.

Question 5

Domain 5: Decision Making and Control

CONFIG

Ava Thompson reads the state machine that governs a delivery robot.

```
IDLE    on task -> DRIVE
DRIVE   obstacle -> STOP
STOP    path clear -> DRIVE
DRIVE   at goal -> DONE
```

Listing 5.1 Robot state machine.

What does the robot do when an obstacle appears while driving?

A Speed up

B Move to STOP

C Return to IDLE

D Jump to DONE

Correct answer: B
The state machine transitions from DRIVE to STOP when an obstacle appears, so the robot halts. It resumes driving only after the path is clear, which keeps the robot from moving into the obstacle.

Question 6

Domain 6: Safety, Testing and Ethics

CONFIG

David Brown lists the safety checks run before a robot operates near people.

```
estop  emergency stop works
speed  limit set for area
zone   keep out zones loaded
log    events recorded
```

Listing 6.1 Pre-operation checks.

Which check lets a person halt the robot at once?

A Emergency stop
B Speed limit
C Keep out the zone
D Event log

Correct answer: A
An emergency stop gives a person a direct way to halt the robot immediately if something goes wrong. Speed limits and keep out zones reduce risk in advance, and the log records events, but only the emergency stop halts motion at once.

Question 7

Domain 1: Autonomous Systems Foundations

A robot senses its surroundings and plans a path but has no way to move its wheels or arms. Which part of the autonomy loop is missing?

A The act stage
B More sensors
C A much faster plan
D A bigger map

Correct answer: A
The autonomy loop is sense, perceive, plan, then act, and acting is what turns a plan into motion through motors and actuators. Without the act stage the robot cannot carry out its plan, while extra sensors, maps, or speed do not supply movement.

Question 8

Domain 2: Perception and Sensing

A single camera struggles at night and in heavy rain, so the team wants the robot to still detect obstacles in poor conditions. What best helps?

A. Add sensor fusion
B. Lower the frame rate
C. Remove the camera
D. Use one sensor only

Correct answer: A
Combining data from several sensor types, known as sensor fusion, lets the robot rely on radar or lidar when the camera is limited by darkness or rain. Dropping sensors or the frame rate reduces information rather than improving detection.

Question 9

Domain 4: Path Planning and Navigation

A robot finds a valid route to the goal but the path hugs a wall so closely that small errors cause bumps. What planning idea best prevents this?

A. Ignore the walls
B. Add a safety margin
C. Plan a longer path
D. Turn off the sensors

Correct answer: B
Adding a safety margin, or clearance, around obstacles keeps the planned path away from walls so small control errors do not cause contact. Ignoring walls or disabling sensors raises risk, and simply lengthening the path does not add clearance.

Question 10

Domain 6: Safety, Testing and Ethics

Before a new delivery robot runs on public paths, the team wants to check its behavior in many rare situations without risk to people. What is the best first step?

A. Skip all testing
B. Test in simulation
C. Launch to the public
D. Remove the brakes

Correct answer: B
Testing in simulation lets the team try many rare and risky situations safely before any real deployment near people. Launching straight to the public or removing safety features would expose people to untested behavior, so simulation comes first.

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