|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 1 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| An intermediate point or location on a robot trajectory and route is called…. |

|  |  |  |
| --- | --- | --- |
| A |  | waypoint |
| B |  | reference point |
| C |  | setpoint |
| D |  | origin |
| E |  |  |

|  |
| --- |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 2 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Consider this robot arm with the following moveable joints: base, shoulder, elbow, wrist1, wrist2, and wrist3. How many degrees of freedom (DoF) this robot has? |

|  |  |  |
| --- | --- | --- |
| A |  | 6 |
| B |  | 5 |
| C |  | 4 |
| D |  | 3 |
| E |  | 2 |

|  |
| --- |
| Image of robot arm. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 3 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| What is the name of this device? |

|  |  |  |
| --- | --- | --- |
| A |  | end-effector |
| B |  | arm |
| C |  | user interface |
| D |  | controller |
| E |  | Teach pendant |

|  |
| --- |
| Image of the control panel screen. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 4 | Points: | 1 | **Two answers are correct.** |

|  |
| --- |
| Which of the following is True about robot controller? |

|  |  |  |
| --- | --- | --- |
| A |  | It is a computer system that controls the movements of the robot arm. |
| B |  | It consists of buttons, switches, or a touchscreen to allow for the input of programming commands. |
| C |  | It is responsible for the end-effector and to prevent interference from occurring within the robots work area. |
| D |  | It cannot interrupt coding that serves as the program for a given robotic application. |
| E |  | It consists only digital/analog inputs and outputs. |

|  |
| --- |
| The robot controller. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 5 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Consider this pick and place application in which the robots should pick objects from left conveyor and place them into a box on the right conveyor. How many sensors do we need? |

|  |  |  |
| --- | --- | --- |
| A |  | 0 |
| B |  | 1 |
| C |  | 2 |
| D |  | 3 |
| E |  | 4 |

|  |
| --- |
| Robot arm between two conveyor belts. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 6 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Wires from sensor and conveyor should be connected to …and… in the controller box. |

|  |  |  |
| --- | --- | --- |
| A |  | digital inputs- digital outputs |
| B |  | analog inputs- analog outputs |
| C |  | digital inputs- analog outputs |
| D |  | digital inputs |
| E |  | digital outputs |

|  |
| --- |
| Controller box. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 7 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Before using an end-effector, which parameter should be set? |

|  |  |  |
| --- | --- | --- |
| A |  | tool center point (TCP) |
| B |  | center of gravity |
| C |  | payload |
| D |  | All of the above |
| E |  |  |

|  |
| --- |
| Robot arm. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 8 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Where is the TCP of this gripper? |

|  |  |  |
| --- | --- | --- |
| A |  | A |
| B |  | B |
| C |  | C |
| D |  | D |
| E |  | E |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Close up of end of gripper with points labeled A-E. A is where it can rotate, B is where the gripping arms start, C-E label points on the object being gripped getting further away from the gripping arms. | | | | |
| Task. No.: | 9 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Where is the TCP of this gripper? |

|  |  |  |
| --- | --- | --- |
| A |  | A |
| B |  | B |
| C |  | C |
| D |  | D |
| E |  | E |

|  |
| --- |
| A griper labeled A-E.  The end of the gripper is A, the joints are E, B-D label parts of the arm getting further from the gripper. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 10 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Where is the TCP of this gripper? |

|  |  |  |
| --- | --- | --- |
| A |  | A |
| B |  | B |
| C |  | C |
| D |  | D |
| E |  | E |

|  |
| --- |
| Gripper arm labeled A-E.  E is the very end of the Gripper.  D-B labels the arm moving away from point E.  A is what connects it to the rest of the robot arm. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 11 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| To set the TCP location with TCP Wizard, how many different set points (angles) are needed? |

|  |  |  |
| --- | --- | --- |
| A |  | 5 |
| B |  | 4 |
| C |  | 3 |
| D |  | 2 |
| E |  | 1 |

|  |
| --- |
| TCP Wizard screen. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 12 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| What is the TCP of this gripper? |

|  |  |  |
| --- | --- | --- |
| A |  | x=100mm, y=0, z=0 |
| B |  | x=0, y=100mm, z=0 |
| C |  | x=0, y=0, z=100mm |
| D |  | x=100mm, y=100mm, z=100mm |
| E |  | x=0, y=0, z=0 |

|  |
| --- |
| A Gripper that is about 15 cm long with the Tool Flange labeled at 10 cm from the TCP point. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 13 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Which type of move has been used in this application? |

|  |  |  |
| --- | --- | --- |
| A |  | MoveJ |
| B |  | MoveL |
| C |  | MoveP |
| D |  | Circle Move |
| E |  |  |

|  |
| --- |
| A robot arm having traced out a rough 3-point triangle. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 14 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Which type of robot motion is suitable in a confined space to avoid collision? |

|  |  |  |
| --- | --- | --- |
| A |  | MoveJ |
| B |  | MoveL |
| C |  | MoveP |
| D |  | Circle Move |
| E |  |  |

|  |
| --- |
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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 15 | Points: | 1 | **Two answers are correct.** |

|  |
| --- |
| What is the difference between MoveP and MoveL? |

|  |  |  |
| --- | --- | --- |
| A |  | MoveP has a constant TCP speed. |
| B |  | MoveP does not have a linear path. |
| C |  | MoveP does not have sharp turns. |
| D |  | MoveP is faster than MoveL. |
| E |  | MoveP needs two waypoints. |

|  |
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| --- | --- | --- | --- | --- |
| Task. No.: | 16 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Which of the following motions needs at least Two waypoints? |

|  |  |  |
| --- | --- | --- |
| A |  | MoveJ |
| B |  | MoveL |
| C |  | MoveP |
| D |  | Circle Move |
| E |  |  |

|  |
| --- |
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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 17 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| In the pick and place application which motion type should be used to reach the marked location? |

|  |  |  |
| --- | --- | --- |
| A |  | MoveJ |
| B |  | MoveL |
| C |  | MoveP |
| D |  | Circle Move |
| E |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A robot arm facing a conveyor belt. | | | | |
| Task. No.: | 18 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| To pick the workpiece, which motion type should be used to reach the marked location? |

|  |  |  |
| --- | --- | --- |
| A |  | MoveJ |
| B |  | MoveL |
| C |  | MoveP |
| D |  | Circle Move |
| E |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A robot arm directly above a block on a conveyor belt. | | | | |
| Task. No.: | 19 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Consider this pick and place application and its corresponding robot program. The robot is moving towards…. |

|  |  |  |
| --- | --- | --- |
| A |  | Waypoint\_1 |
| B |  | Waypoint\_2 |
| C |  | Waypoint\_3 |
| D |  | Waypoint\_4 |
| E |  | Waypoint\_5 |

|  |
| --- |
| Robot arm between two conveyor belts, grabbing an object out of a box on the right conveyor belt.Robot program Movej Waypoint_1 Wait Sensor1=HI MoveL Waypoint_2 Set Gripper=ON Set Payload: GripperHolding Wait: 1.0 Waypoint_3 Movej Waypoint_4 Wait Sensor2=HI MoveL Waypoint_5 Set Gripper=Off Set Payload: EmptyGripper Wait: 1.0 Waypoint_6 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 20 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Which of the following commands does wait for the operator? |

|  |  |  |
| --- | --- | --- |
| A |  | set |
| B |  | wait |
| C |  | popup |
| D |  | comment |
| E |  | halt |

|  |
| --- |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 21 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Which is the command for setting a variable value? |

|  |  |  |
| --- | --- | --- |
| A |  | wait |
| B |  | set |
| C |  | assignment |
| D |  | switch |
| E |  | event |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | | |
| Task. No.: | 22 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| To reduce the robot cycle time, at which waypoint should we use blend radius? |

|  |  |  |
| --- | --- | --- |
| A |  | A |
| B |  | B |
| C |  | C |
| D |  |  |
| E |  |  |

|  |
| --- |
| Robot arm grabbing a block with points labeled A-C.  A is the arm of the robot.  B is the joint connecting to the gripper and C is the block. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 23 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Which of the following statements is True? |

|  |  |  |
| --- | --- | --- |
| A |  | lower cycle time can be obtained by using blend radius at some waypoints. |
| B |  | lower speed increases robot safety. |
| C |  | lower acceleration increases robot lifetime. |
| D |  | joint speed and acceleration can make robot trajectory more efficient. |
| E |  | All of the above. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | | |
| Task. No.: | 24 | Points: | 1 | **Two answers are correct.** |

|  |
| --- |
| At which waypoint should not we increase joint speed and acceleration? |

|  |  |  |
| --- | --- | --- |
| A |  | A |
| B |  | B |
| C |  | C |
| D |  |  |
| E |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A robot arm between two conveyors grabbing a block out of a box on the right conveyor.  Points are labeled A-C.  A is the robot arm.  B is the joint connecting to the gripper and C is the block. | | | | |
| Task. No.: | 25 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| To run a part of a program in several places, we can use… |

|  |  |  |
| --- | --- | --- |
| A |  | event |
| B |  | thread |
| C |  | folder |
| D |  | SubProg |
| E |  | None of the above |

|  |
| --- |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 26 | Points: | 1 | **Two answers are correct.** |

|  |
| --- |
| Which of the following commands is executed in parallel with the main program? |

|  |  |  |
| --- | --- | --- |
| A |  | switch |
| B |  | if |
| C |  | event |
| D |  | thread |
| E |  | wait |

|  |
| --- |
|  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 27 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| In the following program, the robot moves to …. when var\_1=4. |

|  |  |  |
| --- | --- | --- |
| A |  | Waypoint\_1 |
| B |  | Waypoint\_2 |
| C |  | Waypoint\_3 |
| D |  | Waypoint\_4 |
| E |  | Home |

|  |
| --- |
| Robot Program var_1:='Entre a Number?' Switch bar_1 Case 1 Movej Waypoint_1 Case 2 Movej Waypoint_2 Default Case Movej Waypoint_3 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 28 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Which of the following statements is True about feature? |

|  |  |  |
| --- | --- | --- |
| A |  | A feature is a coordinate system consisting of three axes. |
| B |  | The robot has two predefined features: base feature and tool feature. |
| C |  | The user can create its own feature. |
| D |  | Both position and orientation of the feature can be set. |
| E |  | All of the above. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | | | | |
| Task. No.: | 29 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Which of the following features is more suitable for this application? |

|  |  |  |
| --- | --- | --- |
| A |  | Base feature |
| B |  | Tool feature |
| C |  | User defined feature |
| D |  | None of the above. |
| E |  |  |

|  |
| --- |
| A robot arm above an angled surfact with a triangle on it.  At the corner of the surface is a coordinate system with x along the length of the surface, y along the height, and z perpendicular.  At the base of the robot is a coordinate system with x away from the surface, y parallel to the surface, and z straight up. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 30 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Information about robot working condition can be found at…. |

|  |  |  |
| --- | --- | --- |
| A |  | Log tab |
| B |  | I/O tab |
| C |  | Move tab |
| D |  | Installation tab |
| E |  | Run tab |

|  |
| --- |
| A menu with the following options: Run Program Installation (highlighted in blue with a yellow exclamation mark) Move I/O Log |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 31 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| What are the name of A,B, and C points in the *seek* command? |

|  |  |  |
| --- | --- | --- |
| A |  | FromPos, ToPos, StartPos |
| B |  | ToPos, FromPos, StartPos |
| C |  | StartPos, ToPos, FromPos |
| D |  | StartPos, FromPos,ToPos |
| E |  | ToPos, StartPos , FromPos |

|  |
| --- |
| A side view of a robot arm, with a green arrow pointing up to it and a red line perpendicular to that.  The end of the green arrow near the arm is labeled C, the other end is labeled B, and the end of the red line is labeled A. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 32 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| What is the name of this application? |

|  |  |  |
| --- | --- | --- |
| A |  | stacking |
| B |  | destacking |
| C |  | palletizing |
| D |  | depalletizing |
| E |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| A side view of a robot arm, with a green arrow pointing up to it and a red line perpendicular to that., immediately above two blocks  The end of the green arrow near the arm is labeled C, the other end is labeled B, and the end of the red line is labeled A. | | | | |
| Task. No.: | 33 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| In the palletizing template, if we have 12 objects to be placed in *grid pattern* on the pallet, how many points should be set in the program? |

|  |  |  |
| --- | --- | --- |
| A |  | 8 |
| B |  | 4 |
| C |  | 2 |
| D |  | 1 |
| E |  | 0 |

|  |
| --- |
| 9 block arranged in a perfect 2 dimensional square. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Task. No.: | 34 | Points: | 1 | **One answer is correct.** |

|  |
| --- |
| Which of the following patterns in the palletizing application does need *two* positions to be set? |

|  |  |  |
| --- | --- | --- |
| A |  | line |
| B |  | grid |
| C |  | irregular |
| D |  |  |
| E |  |  |

|  |
| --- |
| Various arrangements of blocks labeled. Line has 3 blocks in a line. Grid has 9 blocks arranged in a 2 dimensional square. Irregular shows three rectangles arranged to create a larger rectangle. |

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