FANUC Handling Tool Practice Test (Sample)

Study Guide

Everything you need from our exam experts!

Questions

1. **What is the primary function of the FANUC programming language called 'KAREL'?**
   - A. To create simple applications for basic movements
   - B. To facilitate real-time communication between robots
   - C. To develop complex applications for advanced robot functions
   - D. To manage robot maintenance schedules

2. **How can a user determine the Version ID of a FANUC robot?**
   - A. By checking the main menu
   - B. Menu - Next - Status - Version ID
   - C. Menu - Tools - Version ID
   - D. By consulting the robot's manual

3. **Which operational mode limits Cartesian speed to less than 250 mm/s?**
   - A. T1 Mode
   - B. T2 Mode
   - C. Auto Mode
   - D. Manual Mode

4. **What does 'program cycle time' refer to in automated handling?**
   - A. The time taken for the robot to reset
   - B. The time taken to complete a specific operation
   - C. The total time for robot initialization
   - D. The average speed of robot operation

5. **What defines the success of robot calibration?**
   - A. Reduction of task complexity
   - B. Alignment of movements with standards
   - C. Increase in programming tasks
   - D. Enhancement of physical strength

6. Which of the following represents the robot's major axes?

A. J1, J2, J3

B. J4, J5, J6

C. J1, J3, J5

D. J2, J4, J6

7. Which command allows for modifications relative to orientation in FANUC systems?

A. MOVE

B. OFFSET

C. SET

D. ADJUST

8. In order to correct a singularity error, which joint should be moved?

A. Joint 1 (+/-) 5 degrees

B. Joint 2 (+/-) 15 degrees

C. Joint 4 (+/-) 20 degrees

D. Joint 5 (+/-) 10 degrees

9. What is the function of the hour meter on the SOP panel?

A. To track cycle time

B. To display operating hours

C. To indicate power status

D. To reset faults

10. What does 'robot program scaling' involve?

A. Modifying the robot's language for better understanding

B. Adjusting the size and proportions of the robot's movements

C. Enhancing the robot's performance for larger workloads

D. Reducing the complexity of the robot's programming

Answers

1. C
2. B
3. A
4. B
5. B
6. A
7. B
8. D
9. B
10. B

Explanations

1. What is the primary function of the FANUC programming language called 'KAREL'?

A. To create simple applications for basic movements

B. To facilitate real-time communication between robots

C. To develop complex applications for advanced robot functions

D. To manage robot maintenance schedules

The FANUC programming language 'KAREL' is primarily designed to develop complex applications for advanced robot functions. This programming language offers robust capabilities for creating sophisticated instruction sets that can enhance the operation of robots, allowing for extensive customization and automation in various industrial settings. KAREL supports advanced features like error handling, data manipulation, and the development of intricate algorithms, which makes it ideal for tasks that go beyond simple movements or basic functionality. This capability is particularly important in environments where unique and multifaceted processes need to be automated, thereby increasing efficiency and precision. In contrast, options focused on simple applications, real-time communication, or management of maintenance schedules do not capture the full power and purpose of KAREL, as they pertain to different aspects of robotics that do not utilize KAREL's core strengths.

2. How can a user determine the Version ID of a FANUC robot?

A. By checking the main menu

B. Menu - Next - Status - Version ID

C. Menu - Tools - Version ID

D. By consulting the robot's manual

The Version ID of a FANUC robot can be determined by navigating through the menu structure of the robot's interface. The specific sequence of "Menu - Next - Status - Version ID" directs the user to the relevant section where the Version ID is displayed. This information is crucial as it helps the user identify the specific software version the robot is operating on, which in turn can be important for troubleshooting, compatibility checks, or during software updates. Other methods, such as checking the main menu or tools section, do not lead directly to the Version ID. While consulting the robot's manual can provide general information about checking the Version ID, it does not replace the efficiency and immediacy of obtaining this information directly from the robot's user interface. Thus, the correct navigation through the menu structure is the most effective means of determining the Version ID.

3. Which operational mode limits Cartesian speed to less than 250 mm/s?

A. T1 Mode

B. T2 Mode

C. Auto Mode

D. Manual Mode

The operational mode that limits Cartesian speed to less than 250 mm/s is T1 Mode. This mode is designed specifically for teaching and programming the robot, allowing operators to control the robot's movements at a slower speed to ensure precision and safety during setup. In T1 Mode, the robot is typically operated in a manual control setting by a technician or programmer, which provides the opportunity to accurately position the end effector or tool for tasks such as calibration, alignment, or teaching points in space. The speed limitation helps prevent accidental movements that could damage the robot or surrounding equipment, making it a critical feature for safe operation during the programming phase. The other modes, while they may increase speed or allow for more autonomous operation, do not impose the same restriction and are intended for different operational scenarios. For instance, T2 Mode allows for faster speeds and is often used for more advanced programming scenarios. Auto Mode operates at the maximum speed the robot is capable of, while Manual Mode may allow for variable speeds without the same constraints.

4. What does 'program cycle time' refer to in automated handling?

A. The time taken for the robot to reset

B. The time taken to complete a specific operation

C. The total time for robot initialization

D. The average speed of robot operation

'Program cycle time' in automated handling specifically refers to the duration required to complete a specific operation once it has started. This encompasses all activities that the robot undertakes to achieve a particular task, from the initiation of the operation until its completion. This concept is crucial in evaluating the efficiency and performance of robotic systems, as it helps in understanding how long it takes for a robot to carry out a defined action. Efficient cycle times can lead to increased productivity and better utilization of resources. The other choices do not align with the definition of program cycle time. While resetting and initialization may be parts of the overall operation, they are not specific to the active workflow of completing tasks and therefore do not represent the duration of a specific operation. The average speed of robot operation may provide some insights into performance but does not directly indicate the time taken for a particular action to be completed.

5. What defines the success of robot calibration?

A. Reduction of task complexity

B. Alignment of movements with standards

C. Increase in programming tasks

D. Enhancement of physical strength

The success of robot calibration is best defined by the alignment of the robot's movements with established standards. Calibration ensures that the robot can perform tasks with precision and accuracy by adjusting its parameters to match predefined values. This is crucial in ensuring that the robot operates within the correct operational envelope, allowing it to execute its designated functions effectively and reliably. When movements are aligned with standards, it minimizes errors and enhances overall performance, leading to a more functional automation system. In contrast, while reducing task complexity, increasing programming tasks, or enhancing physical strength can be beneficial in certain contexts, they do not fundamentally address the necessity of ensuring that a robot's movements are accurately calibrated to meet operational benchmarks. These factors may influence other aspects of robotic operation but do not directly define the calibration's success.

6. Which of the following represents the robot's major axes?

A. J1, J2, J3

B. J4, J5, J6

C. J1, J3, J5

D. J2, J4, J6

The major axes of a robot typically refer to the primary joints that allow for the most significant movements and positioning capabilities in robotic arms. In the case of FANUC robots, the designations J1, J2, and J3 correspond to the primary rotational joints that provide the robot with a large range of mobility and flexibility. J1 is generally the base joint, allowing the robot to rotate around a vertical axis, which is crucial for positioning the entire arm. J2 represents the shoulder joint, which provides significant lift and extension capabilities. J3 is the elbow joint, enabling the arm to flex and extend, allowing for more intricate movements and reach. By choosing J1, J2, and J3, you are identifying the foundational axes that contribute most to the robot's ability to manipulate objects and navigate its work envelope effectively. This understanding of how these major axes relate to the robot's articulation and movements is critical for effective programming and operation in handling tasks. The other combinations are less representative of the major axes as they include joints further along the chain that typically offer finer control or additional motions but are not part of the primary frame of reference for fundamental movement.

7. Which command allows for modifications relative to orientation in FANUC systems?

A. MOVE

B. OFFSET

C. SET

D. ADJUST

The OFFSET command is specifically designed for making modifications relative to orientation in FANUC systems. This command allows the user to adjust the position or orientation of the robot's end effector based on a defined reference point or existing position. By applying OFFSET, users can effectively create offsets in the X, Y, Z coordinates or adjust angles without needing to reprogram the entire path or motion commands. This functionality is particularly useful in applications where precise adjustments are necessary for tasks such as assembly, welding, or packaging, where minor changes in orientation can lead to significant improvements in accuracy and efficiency. The other options do not serve the same purpose as OFFSET: MOVE typically refers to a command for positioning without the relative adjustment context, SET usually deals with establishing specific values or states without ongoing adjustments, and ADJUST, while it may seem relevant, is often not used in the context of orientation modifications specifically.

8. In order to correct a singularity error, which joint should be moved?

A. Joint 1 (+/-) 5 degrees

B. Joint 2 (+/-) 15 degrees

C. Joint 4 (+/-) 20 degrees

D. Joint 5 (+/-) 10 degrees

To correct a singularity error in a robotic system, it is essential to understand how the joints of the robot relate to its position and orientation in space. A singularity occurs when the robot's configuration causes a loss of degrees of freedom, making it unable to move in certain directions. Moving Joint 5 by +/- 10 degrees can be particularly effective in resolving singularities because this joint often plays a crucial role in adjusting the end effector's orientation. By fine-tuning the position of Joint 5, you can often regain full control and mobility over the robot's movements, re-establishing a favorable working configuration. The other joints, while they may have their own adjustments, do not typically address the singularity issue as effectively or might lead to larger adjustments that could affect the overall positioning more drastically. Thus, adjusting Joint 5 by a small increment can help navigate out of singularities while maintaining a more stable and precise control over the robot's actions.

9. What is the function of the hour meter on the SOP panel?

A. To track cycle time

B. To display operating hours

C. To indicate power status

D. To reset faults

The function of the hour meter on the SOP panel is to display operating hours. This feature is crucial for monitoring the amount of time that the equipment has been in use, which can help in scheduling maintenance, assessing the wear and tear on machinery, and ensuring that operational efficiency is maintained. By keeping track of the total operating hours, users can better plan for preventive maintenance and avoid unexpected downtimes, thereby enhancing productivity and prolonging the life of the equipment. In this context, while cycle time tracking, power status indication, and fault resetting are important functions for various operational aspects, they do not specifically relate to the functionality of the hour meter, which is solely focused on displaying how many hours the equipment has been actively operational.

10. What does 'robot program scaling' involve?

A. Modifying the robot's language for better understanding

B. Adjusting the size and proportions of the robot's movements

C. Enhancing the robot's performance for larger workloads

D. Reducing the complexity of the robot's programming

Robot program scaling involves adjusting the size and proportions of the robot's movements to ensure that it can operate effectively within a given space or to match specific task requirements. This process may involve altering the parameters of the robot's movements to enable it to handle objects of different sizes, navigate different workspaces, or complete tasks that require varying degrees of precision and reach. When a robot is programmed for a task, factors such as the scale of the objects it will interact with or the specific dimensions of the workspace are critical for successful operation. By scaling the movements, the robot can adapt its programming to maintain efficiency and effectiveness, ensuring that every movement is optimal for the task at hand. This adjustment is essential in applications where precision and accuracy are vital, and it allows the robot to perform a wider range of actions without entirely reprogramming it for different conditions. Understanding and applying robot program scaling is crucial for maximizing the utility of robotic systems in various industrial applications, from simple assembly tasks to complex manipulations in dynamic environments.