

Certification Test

CT.Sigma5.01.eLM.IndexerIntro.CertificationTest



Student Name: _____

Company Name: _____

Address: _____

Phone: _____

Email: _____

Test Date: _____

Answers:

1	_____	26	_____	_____	_____
2	_____	27	_____	_____	_____
3	_____		_____	_____	_____
4	_____		_____	_____	_____
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24	_____		_____	_____	_____
25	_____		_____	_____	_____

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YASKAWA

Taking the Test

- The purpose of this test is to validate the learning experience corresponding to the applicable eLearning Module. It is recommended to preview the questions before viewing the module, and answer them as the module progresses.
- The test is open book. You may use any website, manuals, software, demo, etc. The test must be taken individually; you may not contact another person for help.
- Each question has only one correct answer unless otherwise noted. Please clearly record all answers on the answer sheet. All questions are equally weighted. A passing score is 90%.

Returning the Test

- Please return **only the first page** of the test (the answer sheet) with completed answers and contact information.

Option 1: Fax the answer sheet to **Yaskawa Technical Training Services** at **(847) 887-7185**.

Option 2: e-mail the answer sheet with all answers and contact information to training@yaskawa.com. An edited pdf of the answer sheet is also acceptable.

Receiving Your Score

You may review your answers only if a passing score is received. You will receive a system-generated email with your score. Please allow up to 5 business days.

1. What functionality is supported by the Sigma-5 Indexer?
 - A. Up to 256 Variables
 - B. If, ELSE, WHILE and other logical programming
 - C. Position the motor according to speed and acceleration constraints

2. What additional component is usually required in the Sigma-5 Indexer system?
 - A. PLC
 - B. Path Generator
 - C. Resolver to Digital Converter

3. If the Sel0 input is on (low) and all other Sel inputs are off, what program step is selected?
 - A. 0
 - B. 1
 - C. 2
 - D. 3
 - E. 4

4. Which network communication protocols are supported by the Sigma-5 Indexer?
 - A. Modbus/TCP
 - B. Ethernet/IP
 - C. MECHATROLINK
 - D. EtherCAT
 - E. RS-422/485
 - F. All of the above

5. What is the function of the rotary switch under the front panel tinted window cover?
 - A. Sets the network address
 - B. Sets the baud rate
 - C. Sets the encoder output resolution
 - D. Sets the tuning-less load level
 - E. All of the above
 - F. No function

6. What connectors are used for local digital I/O?
 - A. CN1 and CN7
 - B. CN11 and CN1
 - C. CN11 and CN12
 - D. CN1 and CN12

7. Which file(s) are used to configure the Sigma-5 Indexer?
 - A. Sigma Trace Data (*.std)
 - B. Parameters (*.prm)
 - C. Program Table (*.pgt)
 - D. Programmable Limit Switch (*.pls)
 - E. Zone Table (*.znt)
 - F. Jog Table (*.jgt)
 - G. Speed Table (*.spt)
 - H. Backlash Compensation Table (*.bct)
 - I. Answers A, B, D, E
 - J. Answers A, D, F, G
 - K. Answers B, C, E, F
 - L. Answers B, D, E, F, H

8. What item in SigmaWin+ is used to define the parameters for the mechanical system and units of motion, as demonstrated in the eLM?
- A. Configuration Tool
 - B. Setup Wizard
 - C. Setup Menu
 - D. Parameter Editor
 - E. Motion Monitor
 - F. Hardware Configuration
9. What item in SigmaWin+ is used to define the default move profile constraints, InPosition Width, and Software Limits?
- A. Configuration Tool
 - B. Setup Wizard
 - C. Setup Menu
 - D. Parameter Editor
 - E. Motion Monitor
 - F. Hardware Configuration
10. What parameter controls the InPosition Width for the InPosition output?
- A. Pn522
 - B. PnB21
 - C. PnB23
 - D. PnB2B
 - E. PnB2D
 - F. PnB2F
11. If an application has a reference unit (R.U.) of 0.001[in], what value is used to express a distance of 2.0[in] in the Sigma-5 Indexer?
- A. 2 [R.U.]
 - B. 20 [R.U.]
 - C. 200 [R.U.]
 - D. 2000 [R.U.]
12. If an application has a reference unit (R.U.) of 0.001[in], what value is used to express the speed 1.0[in/sec] in the Sigma-5 Indexer?
- A. 1 [1000 R.U./min]
 - B. 10 [1000 R.U./min]
 - C. 1000 [1000 R.U./min]
 - D. 6 [1000 R.U./min]
 - E. 60 [1000 R.U./min]
 - F. 60,000 [1000 R.U./min]
 - G. 16.66 [1000 R.U./min]
13. If an application requires an acceleration from 0 to 400[1000R.U./min] in 100 [ms], what value is used to express the acceleration in the Sigma-5 Indexer?
- A. 4 [1000 R.U./min/ms]
 - B. 400 [1000 R.U./min/ms]
 - C. 4000 [1000 R.U./min/ms]
 - D. 40,000 [1000 R.U./min/ms]
 - E. 250 [1000 R.U./min/ms]
 - F. 100 [1000 R.U./min/ms]
14. In the Program Table, what is the function of POUT?
- A. Output state BEFORE the step begins
 - B. Output state DURING the step execution
 - C. Output state AFTER the step completes
 - D. Output state AFTER the axis reaches InPosition
 - E. Output state AFTER the EVENT is true

15. In the Program Table, what is the function of LOOP?
- A. Total number of times to execute the step
 - B. Number of times to repeat the step after first execution
 - C. Number of times to execute the For-Next loop logic
16. In the Program Table, what is the function of EVENT?
- A. Sets the condition for the InPosition width
 - B. Sets the condition for execution of the next program step
 - C. Sets the condition for the beginning of the step
 - D. Sets the condition for the total number of times to execute the step
17. What item in the program table can be used to add a time delay to the completion of a step?
- A. TIME
 - B. LOOP
 - C. POUT
 - D. EVENT
 - E. NEXT
18. What output signal can be wired to the PLC to confirm that the servo is enabled?
- A. /S-RDY
 - B. /S-ON
 - C. /BK
 - D. InPosition
19. Programming logical errors and sequence errors reported by the Sigma-5 Indexer do not produce the “alarm” condition, but rather a momentary “warning” condition with momentary display of A.9F on the front panel. What item in SigmaWin+ is used to find the exact error code?
- A. Input Monitor
 - B. System Monitor
 - C. Motion Monitor
 - D. Warning Monitor
20. How is the zero position for absolute moves established when using an incremental encoder?
- A. Homing Routine
 - B. One-time zero position calibration
 - C. Absolute moves not possible with incremental encoder
21. The absolute encoder motor is at the desired zero position, PnB25=0, and “Current motor position” monitor reads 207795. What value is set in PnB25 in order to establish the current motor position as position zero?
- A. 0
 - B. 207795
 - C. -207795
 - D. 415990
 - E. $\sqrt{-825}$
 - F. -415990

22. Which of the following statements **are true** about homing with the Indexer?
- A. Sigma-5 Indexer homing routines work with an encoder used as absolute
 - B. If the encoder battery is removed, the absolute encoder becomes incremental
 - C. The absolute encoder can be used as incremental by setting Pn002
 - D. Sigma-5 Indexer homing routines work only with encoders used as incremental
 - E. A&B
 - F. B&C
 - G. C&D
 - H. D&E
 - I. B&D
23. Which of the following is **not** true about the registration function?
- A. Means speed and distance can be changed during motion
 - B. Must be used for every program step if /RGRT is connected
 - C. Requires the /RGRT input
 - D. Requires the use of the Registration Table
 - E. A&B
 - F. A&C
 - G. B&C
 - H. B&D
24. Which of the following is **not** true about the Zone Output feature?
- A. Means an output combination can turn on within a selected position range
 - B. Requires the use of the Zone Table
 - C. Applies only to rotary applications
 - D. Must be set in the POUT field for the applicable program step
 - E. Are high-speed hardware-level outputs
25. How many Jog Speeds are available for Jog Operation?
- A. 3
 - B. 4
 - C. 16
 - D. 128
 - E. 256
26. Which of the following is **not** true about the Software Limit feature?
- A. Replace hardware-level over-travel sensors
 - B. Require proper establishment of the zero position
 - C. Prevent the initiation of a positioning move that would move past the limit
 - D. Can be disabled by setting PnB23=0 and PnB21=0
27. Which movement modes can be selected when the indexer is operated in rotary mode?
- A. Forward
 - B. Reverse
 - C. Shortest Way
 - D. Current Direction
 - E. A&B only
 - F. A&B&C only
 - G. All of the above: A&B&C&D