Siemens SCE S7-1200 Advanced Course Certification Questions

Note: this document contains questions taken from the SCE Advanced Course Student Guide. The questions are grouped per the chapters where the content is addressed.

# Chapter 1: Training Unit

1. When working with Industrial Ethernet, the \_\_\_\_\_\_\_\_\_ connector is the most common.
   1. RJ-12
   2. M-12
   3. M-45
   4. RJ-45
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be inserted/plugged into the front of a 1200-series Processor Module.
   1. Signal Modules
   2. Auxiliary I/O Boards
   3. Signal Boards
   4. Piggy-back Modules

# Chapter 2: Commissioning Hardware & Software

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ form the interface between the operating system and the user program.
   1. Organization blocks (OBs)
   2. Function Blocks (FB’s)
   3. Functions (FC’s)
   4. Data Blocks
2. \_\_\_\_\_\_\_\_\_\_\_\_\_ is cyclically called by the operating system.
   1. OB255
   2. OB1
   3. DB1
   4. FC12
3. The primary difference between Functions and Function Blocks is that \_\_\_\_\_\_\_\_\_\_\_\_\_ have their own memory area in the form of instance data blocks.
   1. Function Blocks
   2. Functions
   3. Organization blocks
4. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is the memory area in which the states of all digital inputs are stored.
   1. Process-Image Input table (PII)
   2. Process-Image Output table (PIQ)
   3. Digital Input Image Table Area (DIITA)
   4. Digital Output Image Table Area (DOITA)
5. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_is the memory area in which the states of all digital outputs are stored.
   1. Process-Image Input table (PII)
   2. Process-Image Output table (PIQ)
   3. Digital Input Image Table Area (DIITA)
   4. Digital Output Image Table Area (DOITA)
6. When you switch power on or switch from STOP --> RUN, the CPU carries out a complete restart by executing \_\_\_\_\_\_\_\_\_\_\_.
   1. OB1
   2. FC100
   3. DB100
   4. OB100
7. Data is exchanged between SIMATIC S7 (the PLC) and the HMI system via\_\_\_\_\_\_\_\_\_.
   1. Flags
   2. Sheets
   3. Nuggets
   4. Tags
8. The HMI devices can communicate with the PLC using
   1. MPI
   2. PROFIBUS
   3. Industrial Ethernet
   4. All The Above
   5. A & B Above
9. Each Ethernet interface has been assigned a fixed and worldwide unique address by its manufacturer. This address is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. It is stored on the network card and is used as the unique identification in a local network.
   1. WAC address (Worldwide Access Control)
   2. MAC address (Media Access Control)
   3. GAC address (Global Access Control)
   4. EAC address ( Earth Access Control)
10. A network can be divided into sub-networks by way of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    1. A Halloween Mask
    2. A Goalie Mask
    3. A Subnet Mask
    4. An M-12 connector
11. If an Industrial Ethernet connection between the programming device and the CPU is to be established \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    1. The assigned IP addresses have to be in the same subnet.
    2. Termination resistors are required on both ends of the cable.
    3. Termination coils (chokes) are required on both ends of the cable.
    4. A PROFIBUS cable is required.
12. Every Organization Block program execution can be interrupted between instructions by an event (OB) with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    1. higher priority
    2. Lower Priority
    3. Priority Level of 100 or above
    4. Priority Level of 500 or above
13. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_blocks contain information which can be accessed by all logic (code) blocks in the user program.
    1. Global Data
    2. Instance Data
    3. Universal Data
    4. Universal Information
14. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_blocks are always assigned to a specific Function Block.
    1. Global Data
    2. Instance Data
    3. Specific Data
    4. Specific Information
15. IEC-61131 is the standard published by the International Electrotechnical Commission regarding \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    1. Industrial Printing Operations
    2. Forestry
    3. PLC’s
    4. Robotics
16. Function blocks (FB) are user program blocks and can be called by
    1. Organization Blocks (OB’s)
    2. Other Function Blocks (FB’s)
    3. Functions (FC’s)
    4. All the above
17. Blocks can only be monitored if:
    1. there is an online connection to the CPU
    2. the offline block is identical to the online block
    3. both A & B
    4. none of these – Blocks cannot be monitored

# Chapter 3: Analog Value Processing

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ convert changes in things such as linear expansion, angular distortion, and alteration of electrical conductivity into standard analog signals, such as: ± 500mV, ± 10V, ± 20mA or 4 to 20mA. These signals are supplied to analog input modules.
   1. Transducers
   2. Transponders
   3. Transitive Verbs
   4. Translative Conductivitators
2. Before analog values can be processed in the CPU, they must \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Undergo an analog-to-digital conversion
   2. Be translated to Latin
   3. Measured with an oscilloscope
   4. Written down in Octal format
3. When configuring an Analog Input Channel, the valid Measurement Types are:
   1. Voltage
   2. Current
   3. Temperature
   4. Gallons Per Minute
   5. A & B above
   6. C & D above
4. When configuring an Analog Input Channel, if you wanted to generate a diagnostic interrupt when the measured value exceeds the range of the channel, you would \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Check the Enable Overflow Diagnostics checkbox.
   2. Check the Enable Underflow Diagnostics checkbox.
   3. Set the Immediate Parameter Violation Notification Delay Time (IPVND) to zero
   4. Both B & C Above
5. When the CPU is placed in STOP from RUN, an analog output channel will
   1. Be switched off
   2. Keep the last value
   3. Use a substitute value
   4. One of the above – depending on the configuration setting
   5. Be forced to the maximum value possible
6. In memory, negative analog values are represented in a numerical format called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. One’s Compliment
   2. Complimentary Negativity
   3. Two's Complement
   4. One’s Insult
7. If the resolution of an analog module is less than 16 bits, the analog value is written into memory \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Left-Justified
   2. Right Justified
   3. Unjustified
   4. Totally Justified
8. With Analog Modules, resolutions of between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bits are possible, depending on the type of module.
   1. 2 and 32
   2. 1 and 16
   3. 8 and 16
   4. 7 and 21
9. An analog module encrypts the voltage range of -10V to +10V in the value range of -27648 to +27648. Which instruction is used to convert this to a linear scale between the values of 0 and 1?
   1. Normalize
   2. Scale
   3. Linearize
   4. Decrypt
10. Once an analog value has been converted to a linear scale between the values of 0 and 100 (i.e. a percentage), which instruction is used to linearly map it to a specified value range (i.e. engineering units) ?
    1. Normalize
    2. Scale
    3. Linearize
    4. Rangerizer

# Chapter 4: Data Blocks

1. \_\_\_\_\_\_\_\_\_\_\_ Data Blocks are always assigned to a particular Function Block.
   1. Shared
   2. Instantaneously Available
   3. Instance
   4. Outstance
2. \_\_\_\_\_\_\_\_\_\_\_ Data Blocks contain information that all the logic blocks (that would include OB1) in the user program can access.
   1. Shared
   2. Instantaneously Available
   3. Instance
   4. Outstance
3. UDT refers to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. User-defined Data Type
   2. Undefined Data Type
   3. Ulcer-inducing Data Type
   4. Universal Detrending Timer
4. \_\_\_\_\_\_\_\_are templates for declaring variables of complex data types or structure variables.
   1. Elementary Data Types
   2. UDT’s
   3. Bool’s
   4. Control Words
5. The \_\_\_\_\_\_\_ data type is used for data that is 8 bits long.
   1. BOOL
   2. SINT
   3. INT
   4. DINT
6. The \_\_\_\_\_\_\_ data type is used for data that is 32 bits long.
   1. BOOL
   2. SINT
   3. INT
   4. DINT
7. The \_\_\_\_\_\_\_ data type is used for data that is to be stored in format that allows non-integer values (i.e. not a whole number, or values that include a decimal).
   1. REAL
   2. SINT
   3. INT
   4. DINT
8. The default unit of measure for the TIME data type is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Days
   2. Weeks
   3. Seconds
   4. Milliseconds
9. This variable contains the number of milliseconds since the beginning of the day (0:00 o‘clock) in the form of an unsigned integer.
   1. Time\_Of\_Day (TOD)
   2. Milliseconds\_Since\_Midnight (MSM)
   3. Number\_of\_Milliseconds\_Since\_Yesterday\_Ended (NMSYE)
   4. Tick\_Tocks\_For\_Today (TTFT)
10. Which of the following best describes SRING variables?
    1. They are used to “String” mathematical operations together (e.g. 2+5/(49/7)
    2. They are used to store Character Strings of up to 254 characters (e.g. SIEMENS)
    3. They are made of fibrous material – usually stored in memory in the form of a “Ball”
    4. They are one bit long.
11. This complex data type is used to store groups of elements of the **same data type** and could be thought of somewhat like a file drawer.
    1. DINT
    2. ARRAY
    3. STRING
    4. REAL
12. This complex data type is used to store groups of elements of **different data types** and could be thought of somewhat like a file drawer.
    1. DINT
    2. STRUCT
    3. STRING
    4. REAL
13. When creating or editing a Data Block, you can determine if an element of the data can be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    1. Accessed from the HMI
    2. Visible from the HMI
    3. Both A & B
    4. None of these – Data Blocks can’t be created nor edited.

# Chapter 5: Functions & Function Blocks

1. If data are to be retained even after the block is executed, \_\_\_\_\_\_\_\_\_\_\_\_ variables should be used within the block.
   1. Static
   2. Temporary
   3. Long Lasting
   4. Short Duration
2. If data re to be stored only while the block is being executed, \_\_\_\_\_\_\_\_\_\_\_\_ variables should be used within the block.
   1. Static
   2. Temporary
   3. Long Lasting
   4. Short Duration
3. Parameter-assignable blocks are created for frequently recurring program functions. Which of the following is true regarding this type of block?
   1. The program only has to be created once, which significantly reduces programming time.
   2. The block is only stored in the user memory once, which significantly reduces the amount of memory used.
   3. The block or the functionality implemented with the block can be called as often as you like.
   4. All the above.
4. You can program \_\_\_\_\_\_\_\_\_\_\_\_\_\_ as parameter-assignable.
   1. Functions (FC’s)
   2. Function Blocks (FB’s)
   3. Organization Blocks (OB’s)
   4. All the above
   5. Both A & B
5. Unlike Functions (FC’s), Function Blocks (FB’s) have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. These variables form the memory of the FB since they are stored in their own memory area.
   1. Static Variables
   2. Dynamic Variables
   3. Temporary Variable
   4. Temperamental Variables
6. The instructions FIELD READ and FIELD WRITE\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Use Indirect Addressing
   2. Are used to address data within an array
   3. Both A & B
   4. None of these

Chapter 6: Structured Control Language (SCL)

1. SCL stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Structured Control Language
   2. Simple Control Lingo
   3. Sensational Computer Language
   4. Somewhat Counterintuitive Logic
2. It doesn’t matter what type of code block (OB, FC or FB) is used. "SCL" can be selected as the "Language".
   1. True
   2. False
3. Within SCL, each instruction \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Must begin with a semicolon (;).
   2. Must end with a semicolon (;).
   3. Must NOT contain a semicolon (;).
4. Within SCL, what is the difference between the usage of the characters “:=” and “=”?
   1. The characters “:=” are used for an Assignment, meaning it determines the value of an Operand, as in “C := A \* 5”. The character “=” is used for a comparison, as in “If A = B DO….”.
   2. The character “=” is used for an Assignment, meaning it determines the value of an Operand, as in “C = A \* 5”. The characters “:=” are used for a comparison, as in “If A := B DO …”.
   3. Neither of the above are true.
5. Within SCL, the characters “//” are used \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. To perform the arithmetic function of division
   2. To denote programmer’s comments
   3. for an Assignment, meaning it determines the value of an Operand
6. Which of the answers provided below best describes the following SCL statement:  
    **WHILE "A" = 1 DO  
    // Statement section WHILE   
    "Block\_2"();   
    END\_WHILE;**
   1. As long as the Tag A is equal to a value of 1, Call the Function named “Block 2.”
   2. As long as the Statement While is being Done, Tag A will equal “Block 2”
   3. While Doing “A” Block 2 will equal 1
   4. Both b and c above.

# Chapter 7: Introduction to PROFINET IO

1. When configuring a distributed I/O Device’s connection to a CPU, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. You must assign a Device Name
   2. You must assign an IP Address
   3. Both A and B above
   4. You only need a 2-digit node number
2. For identification, every Ethernet node/device requires a fixed, world-wide unique address which is assigned to it by the manufacturer This is called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. The DAVID address (Direct Access Validation Identification)
   2. The MAC address (Media Access Control)
   3. The Paul address (Peripheral Access Underwriters’ Licensing)
   4. None of these
3. An IP address \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Consists of 4 bytes – each expressed by a decimal value between 0 and 255
   2. Is 32 bits long
   3. Is required for PROFIBUS communications
   4. Both a and B are correct
4. PROFIBUS has a much faster transmission rate than PROFINET.
   1. True
   2. False
   3. This is a trick question – the transmission rates are identical.

# Chapter 8: Tags and Messages with HMI

1. Under the HMI Device Maintenance Menu, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can be used to create a ZIP-archive which contains your generated HMI project and a program for the project transfer.
   1. Boogie On Down The Road
   2. Pack & Go
   3. Back Me Up Jack
   4. Zipidy Do Da
2. In order to associate screen elements on an HMI (such as an I/O Field) with data residing within a PLC, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. HMI Tags are associated with PLC Blocks
   2. HMI Functions are associated with PLC Organization Blocks
   3. HMI Tags are associated with PLC Tags
3. An analog alarm is triggered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. when the value of a trigger tag is above the upper limit value.
   2. when the value of a trigger tag is below the lower limit value.
   3. When the value of a trigger tag is between the upper and lower limit values.
   4. Either A or B above

# Chapter 9: Technology Objects

1. The two pulse generators on the SIMATIC S7-1200 series controllers \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. can be used independent of each other
   2. can be used for Pulse Width Modulation (PWM)
   3. can be used for pulse train (Pulse-Train Output – PTO)
   4. all the above
2. When commissioning a PID Controller, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. PID parameters can be set automatically through Auto-Tuning
   2. PID parameters can be entered manually
   3. Both A & B above
3. The technology object "Axis" is used for controlling
   1. stepper motors
   2. servo motors
   3. thermocouples
   4. either A or B
4. When working with the “Axis” technology object, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ tool allows the functioning of the axis to be tested without having to create a user program.
   1. Evaluation
   2. Commissioning
   3. Try-Out
   4. Diagnostics
5. . When working with the “Axis” technology object, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ tool allows you to check the current Status and Error information of axis and drive
   1. Evaluation
   2. Commissioning
   3. Try-Out
   4. Diagnostics
6. When configuring an “Axis” technology object you must specify \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. An associated High Speed Counter
   2. A Direction Output
   3. A Pulse Output
   4. All the above

# Chapter 10: Troubleshooting

1. If the status indicator for a Function or Organization Block is indicated as a “Green Circle”,\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. The CPU operating mode is in STOP
   2. The online and offline version of the object are identical
   3. The online and offline version of the object are different
   4. The object only exists online
2. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is part of the CPU’s system memory. It contains the errors detected by the CPU and diagnostics-capable modules.
   1. diagnostics buffer
   2. warnings widget
   3. fault finder
3. One way to monitor the values of Tags is by using a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. diagnostics buffer
   2. watch table
   3. object configuration window
4. In order to override the value of a physical input or physical output, you would use a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. diagnostic buffer
   2. force table
   3. warnings widget
5. The Call Structure \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. shows the call hierarchy of the blocks within an S7 program.
   2. lists the phone numbers of field service engineers in your area
   3. is used to override the value of a physical input or physical output
   4. contains the errors detected by the CPU
6. The assignment list
   1. gives you an overview of which bits of the operands of the memory areas I, Q and M are already occupied within the user program.
   2. lists the phone numbers of field service engineers in your area
   3. is used to override the value of a physical input or physical output
   4. contains the errors detected by the CPU
7. If you are trying to identify where a Tag is used within a Project file, you would perform a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Enable Forces
   2. Cross Reference
   3. Assignment List
8. If you wanted to check the utilization of memory or I/O within the system, you would check \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. The Assignment List
   2. The Watch Table
   3. Resources
   4. Cross Reference

IIOT stands for

Internet of Things

Industrial Internet of Things

Industrial Input output types

Intermittent Internet output timing

IOT is the concept of connecting devices like

Home appliances

Factory floor sensors

Intelligent devices and phones

All of the above

Protocols such as