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CANDIDATE INFORMATION

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CERTIFIED SIMULINK ASSOCIATE EXAM

Earning this credential validates your proficiency with Simulink and can help you to enhance your credibility and accelerate your career.

PREREQUISITES

To properly prepare, we recommend taking the following MathWorks training course:

• *Simulink Fundamentals*

SAMPLE PROBLEMS

View *sample exam questions* representative of the format and difficulty level expected on the exam.

PREPARING FOR YOUR EXAM

OBJECTIVES TESTED

MathWorks training courses provide coverage across these objectives as well as exercises if additional learning and practice are necessary.

MODELING

• Use blocks to generate input signals.
• Model relational, logical, and programming operations.
• Model mathematical expressions.
• Use blocks to view simulation results.
• Look up or interpolate empirical data using a block.
• Use a block to call a MATLAB function.
• Concatenate signals into vectors and deconstruct vectors into scalar signals.
• Add signal hierarchy to a model using bus signals.
• Model a system with continuous states.
• Model a system with discrete states.
• Change the sample time of a block to be inherited, continuous, or discrete.
• Identify sample times in a model.

SIMULATION

• Simulate a model for a desired duration.
• Explain the differences between fixed-step and variable-step solvers.
• Explain the differences between continuous and discrete solvers.
• Describe how solver step size can affect simulation speed and accuracy.
• State the simulation behavior of a model containing blocks with different sample times.
• Describe what causes zero-crossing events during simulation.
• Identify algebraic loops and state their effect on the simulation.

MODEL ORGANIZATION

• Add visual hierarchy to a model using subsystems.
• Navigate through hierarchical models and view underlying block diagrams.
• Mask a subsystem with a custom parameter dialog.
• Add functional hierarchy to a model using subsystems.
• Control the execution of a subsystem with an external signal.
• Reference a model as a part of another model.
• Reference a subsystem as part of another model.
• Display links to custom libraries in a model.

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ADDITIONAL INFORMATION

For additional information regarding the MathWorks Certification Program, visit *mathworks.com/certification*.

MODEL AND SIMULATION DATA

- Set model and block parameters.
- Define parameters in the base workspace.
- Define parameters in the model workspace.
- Describe the precedence of mask, model, and base workspaces.
- Import signals into a model.
- Export simulation data from a model.
- Compare simulation data from multiple runs.

SIMULINK BLOCKS TO KNOW

CONTINUOUS
- Derivative
- Integrator
- Integrator, Second Order
- PID Controller
- State-Space
- Transfer Fcn

DISCONTINUITIES
- Hit Crossing
- Saturation

DISCRETE
- Discrete PID Controller
- Discrete State-Space
- Discrete Transfer Fcn
- Memory
- Unit Delay

LOGIC AND BIT OPERATIONS
- Compare To Constant
- Compare To Zero
- Interval Test
- Logical Operator
- Relational Operator

LOOKUP TABLES
- 1-D Lookup Table

MATH OPERATIONS
- Abs
- Add
- Bias
- Divide
- Gain
- Math Function
- Product
- Rounding Function
- Sign
- Sqrt
- Subtract
- Sum
- Sum of Elements
- Vector Concatenate

PORTS AND SUBSYSTEMS
- Atomic Subsystem
- Enable
- Enabled and Triggered Subsystem
- Enabled Subsystem
- Inport
- Model
- Outport
- Subsystem
- Subsystem Reference
- Trigger
- Triggered Subsystem

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SIGNAL ATTRIBUTES
• Rate Transition

SIGNAL ROUTING
• Bus Creator
• Bus Selector
• Demux
• Multiport Switch
• Mux
• Selector
• Switch
• Vector Concatenate

SINKS
• Display
• Scope
• Stop Simulation
• Terminator
• To File
• To Workspace
• XY Graph

SOURCES
• Clock
• Constant
• From File
• From Workspace
• Pulse Generator
• Ramp
• Random Number
• Signal Editor
• Sine Wave
• Step

USER-DEFINED FUNCTIONS
• MATLAB Function