1 Review our Exam Discounts Webpage info on discounts and how to purchase single exam or bulk exam vouchers.

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Duration
105 mins in native English-speaking countries. 135 mins in all others.
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Fee
US$350 + taxes
(regional currency equivalent and taxes)

Format
Multiple choice
(text and images)

Language
English. Use of translation apps during the exam is prohibited.

Passing Score
>=64/90 correct answers
or >=71% correct answers

Prerequisites
Passing scores on SysML Model User, Model Builder Fundamental, and Model Builder Intermediate exams.

Technical Issues
Contact Pearson VUE Customer Service. Make sure to perform a System Test on your computer before scheduling an online exam.

Validity
Certifications expire 5 years after exam date. Take the same or higher level exam to extend certification validity.

STANDARD AREAS COVERED

- **System Modeling Language (SysML) v1.2**
- **UML Profile for MARTE: Modeling and Analysis of Real-Time Embedded Systems v1.0**: Chapters 1 (Scope), 6.1 (Scope of OMG RT/E Related Standards), 6.2 (Rationale and General Principles) and 6.3 (Approach and Structure).
- **Unified Profile for DoDAF and MODAF (UPDM) v2.1.1**: Figures 2.2 (UPDM Compliance Levels 0 and 1) and 2.3 (L0 and L1) and Chapters 7.1 (Introduction), 7.2 (Philosophy), 7.3 (Core Principles) and 7.6 (Important Areas of the Architecture) and 8.3 (UPDM L1) to 8.3.1.
- **SysML-Modelica Transformation v1.0**: Chapters 1 (Scope) and 7 (Transformation Approach), and Annexes A (Examples) and B (Justification). For more information visit the **Modelica Website**.
- **Requirements Interchange Format v1.2**: Chapter 1 (Scope)
- **Object Constraint Language v2.4**: Chapter 7 through 7.3.

RECOMMENDED STUDY MATERIALS

- **A Practical Guide to SysML: The Systems Modeling Language, 3rd Edition (Friedenthal, Moore and Steiner)**: Chapters 2.2 (Modeling Principles), 2.4 (Questions), 5 (Viewing SysML Models with Diagrams), 15 (Customizing SysML for Specific Domains), 17.3.4 (Define Logical Architecture) and 18 (Integrating SysML into A Systems Development Environment). All authors contributed to the SysML specification.
- **Systems Engineering with SysML/UML: Modeling, Analysis, Design (Weilkiens)**: *Authors contributed to the standard.
- **Using OMG's SySML to Support Simulation (Paredis & Johnson)**
- **Metamodel-based UML Notations for Domain-specific Languages (Brucker & Doser)**
- **Applied Metamodeling – A Foundation for Language Driven Development (Clark)**: Chapters 2 (Metamodelling) and 3 (A Metamodelling Facility).
- **What Do Models Mean? (Seidewitz)**
- **Simulation-Based Design Using SysML: Part 1: A Parametrics Primer (Peak)**
- **Simulation-Based Design Using SysML: Part 2: Celebrating Diversity by Example (Peak)**
- **All About IEE Std 1471 (Hilliard)**: Focus on Slides 23 to 31. See **IEEE Std 1471 Webpage** for more.
- **Building Bridges Between Systems and Software with SysML and UML (Hause & Thorn)**
- **MARTE, THE UML Standard Extension for Real-Time and Embedded Systems (Gerard)**
- **Introduction to UPDM (Bleakley)**
- **Model-Based System of Systems Engineering with UPDM (Hause)**
- **Integrating Models and Simulations of Continuous Dynamics into SysML (Johnson)**
- **Survey of Model-Based Systems Engineering (MBSE) Methodologies (Estefan)**: Chapters 1 (Introduction) and 2 (Differentiating Methodologies from Processes, Methods, and Lifecycle Models).
- **Systems Engineering Best Practices with the Rational Solution for Systems and Software Engineering v4.1 (Hoffmann)**: Chapter 2.2
- **What Is Systems Engineering? (Bahill & Dean)**
- **Evaluating Quality in Model-Driven Engineering (Mohagheghi & Aagedal)**
- **Existing Model Metrics and Relations to Model Quality (Mohagheghi & Dehlen)** For greater detail, read **Definitions and Approaches to Model Quality in ModelBased Software Development – A Review of Literature (Mohagheghi & Dehlen)**.

35%	**METHODOLOGY-RELATED CONCEPTS AND PRACTICES INCLUDING ASSESSMENT OF THE QUALITY OF THE MODEL** Understanding all the steps of a project development from start to final design. Understanding the different aspects of a system development methodology. Choosing a system development methodology. Using OCL to state formal constraints. Assessing model quality.
25%	**CONCEPTS FOR ADAPTING SYSML INCLUDING METAMODELING, PROFILES, MODEL LIBRARIES & VIEWPOINTS** **Customizing the Language**: Rationale and motivations for using the different available mechanisms for extending the language. **Metamodel-based Extensions of SysML**: Understanding metamodeling concepts, capabilities and limitations. **Profiles**: Creating and using a profile, including defining stereotypes, their properties and constraints. **Model Libraries**: Creating and using a model library. **Viewpoints**: Specifying a viewpoint and using that viewpoint to support model development.
20%	**INTEGRATING SYSML WITH OTHER MODELING LANGUAGES SUCH AS UML, MARTE, UPDM & MODELICA** **UML**: Integrating SysML and UML models to support the transition from systems to software design. **MARTE**: Extending the modeling of hardware and software to real-time and embedded environments. **UPDMTM**: Supporting the transition from a MoDAF or DoDAF enterprise architecture expressed using UPDM, into systems architectures using SysML. **Modelica**: Preparing SysML models for analysis in Modelica-based tools.
20%	**INTEGRATING SYSML MODELING TOOLS WITH OTHER TYPES OF TOOLS & TOOL SELECTION CRITERIA** **Tool Integration Approaches**: Integrating a SysML modeling tool with other engineering tools (e.g., requirements management, software or hardware development, model analysis, etc.). Configuring SysML models in configuration management tools including the use of the MOF versioning standard for model versioning. **Model Interchange**: Understanding the reasons for performing model interchange and issues that must be considered. Understanding different interchange mechanisms. Using model interchange standards such as XMI, RIF and AP233. **Tool Selection Criteria**