

# OMG-OCSMP-MBA400<sup>Q&As</sup>

OMG-Certified Systems Modeling Professional - Model Builder – Advanced

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## **QUESTION 1**

Choose the correct answer.

An engineering learn has been charged to design and build an embedded real-time control system using COTS (Commercial Off-The-Shelf) purchased components where possible A technical risk for such a control system is that the system will miss (i.e., fail to respond to) critical inputs The project has the additional risk that there may not be any components on the market that will meet both timing and cost constraints

Given this, what information must be in the model before the engineering team can begin selecting and procuring COTS components?

A. timing constraints for all behaviors involved in responding to a critical input

B. (1) liming constraints for all behaviors involved in responding to a critical input (2) total system production cost provided by the customer

C. (1) minimum period of time between any two successive critical inputs (2) maximum acceptable time to produce all outputs for a critical input (3) allocation of (2) to all behaviors involved in responding to a critical input (4) total system production cost provided by the customer

D. (1) minimum period of time between any two successive critical inputs (2) maximum acceptable time to produce ail outputs for a critical input (3) allocation of (2) to all behaviors involved in responding to a critical input (4) total system production cost provided by the customer (5) allocation of (4) to system components

E. (1) minimum period of time between any two successive critical inputs (2) maximum number of critical inputs that will arrive in a given time interval (3) maximum acceptable time to produce all outputs for a critical input (4) allocation of (3) to all behaviors involved in responding to a critical input (5) total system production cost provided by the customer (6) allocation of (5) to system components

#### Correct Answer: E

The information in option E is necessary and sufficient for the engineering team to begin selecting and procuring COTS components for the embedded real-time control system. This information defines the timing and cost requirements and constraints for the system and its components, which are essential for evaluating and comparing the available COTS components. The other options are either incomplete or irrelevant for this purpose. For example, option A does not include the minimum period of time between critical inputs, the maximum number of critical inputs, or the cost information. Option B does not include the minimum period of time between critical inputs or the maximum number of critical inputs. Option C does not include the maximum number of critical inputs or the allocation of cost to system components. Option D does not include the maximum number of critical inputs.

#### **QUESTION 2**

Choose the correct answer

Which kinds of model elements ate used to populate the typical stakeholder views of a design?

- A. primarily behavior elements, such as activity, state and sequence diagrams
- B. primarily structural elements, such as block definition and internal block diagrams
- C. both behavioral and structural diagrams



D. primarily use case and requirements diagrams

#### Correct Answer: C

The typical stakeholder views of a design are composed of both behavioral and structural diagrams, depending on the purpose and perspective of the view. Behavioral diagrams show how the system or part behaves or interacts in different scenarios or states, such as activity, state and sequence diagrams. Structural diagrams show how the system or part is composed of parts, ports, connectors and properties, such as block definition and internal block diagrams. Both types of diagrams are important to convey the functionality and architecture of the system or part to different stakeholders. Use case and requirements diagrams are not sufficient to populate the stakeholder views of a design, as they only capture the functional and non-functional aspects of the system or part. References: OMG- Certified Systems Modeling Professional - Model Builder ?Advanced (OCUP2-ADV) Examination Guide Version 1.0, Section 4.4

### **QUESTION 3**

Choose the correct answer

What is the purpose of the Domain Metamodel in UPDM?

- A. It defines the implementation metamodel.
- B. It defines the stakeholder requirements for the metamodel.
- C. It defines the mapping of UML to SysML and SOAML concepts
- D. It defines the melamodel concepts and relationships without any implementation

Correct Answer: D

The purpose of the Domain Metamodel in UPDM is to define the metamodel concepts and relationships without any implementation. The Domain Metamodel captures the core concepts of DoDAF and MODAF in terms of entities, attributes, associations, and constraints. It does not specify how these concepts are implemented in UML, SysML, or any other language or tool. The Domain Metamodel serves as a requirements model for UPDM and provides traceability links between the domain concepts and the profile elements.

#### **QUESTION 4**

Choose the correct answer.

A team of designers led by a hardware systems engineer is finding it difficult to manage the design of a distributed airconditioning system\_ Each system component Is a complex assembly with multiple design models (such as MCAD. ECAD, and Spreadsheets). The system engineer wants to architect an approach that achieves the following

(1)

provides a unified view of the design of the system and Its components

(2)

provides a unified model for generating a bill-of-materials

(3)



provides sufficient semantics to propagate changes made in one design model to another

Assume that the system engineer Is allocated resources to purchase or develop the new software required for this architecture

Which approach would be most effective from a MBSE perspective?

A. import each design model into a single SysML model and then create relationships between the design models

B. import each design model into a separate SysML model, link the SysML models together, and then create relationships between the design models

C. create a SysML block structure representing (he system and its components, and then create relationships between the blocks and the design models

D. create a SysML package structure representing the system and its components, and then create relationships between the packages and the design models

E. create a SysML activity structure representing the design process of each component, and then create relationships between the activity parameters and the design models

Correct Answer: C

This approach would be most effective from a MBSE perspective because it allows the system engineer to create a unified view of the design of the system and its components using SysML blocks and relationships. A block is an extension of the UML Class metaclass that can be used to model any system component with structure and behavior. A relationship is a connection between model elements that specifies some kind of dependency or association. By creating a SysML block structure representing the system and its components, the system engineer can capture the hierarchy, composition, classification, generalization, etc., of the system elements. By creating relationships between the blocks and the design models, such as MCAD, ECAD, or Spreadsheets, the system engineer can link the SysML model with the external models and provide traceability and consistency. The system engineer can also use the SysML model to generate a bill-ofmaterials for the system and its components, as well as to propagate changes made in one design model to another using allocation or synchronization mechanisms.

# **QUESTION 5**

Choose the correct answer.

A modeling team supervisor has defined a stereotype of block named \*projectBlock?and wants to prevent any use of an unstereotyped block

What must the supervisor do?.

- A. delete ?lock?from the profile
- B. give \* blocks the (abstract) keyword in the profile
- C. mark the extending stereotype with the {strict} keyword
- D. mark the extending stereotype with the {required} keyword
- E. attach a note to ?lock?in the profile forbidding its use

Correct Answer: C



To prevent any use of an unstereotyped block, the supervisor must mark the extending stereotype with the {strict} keyword. This keyword indicates that only elements with this stereotype can be created as instances of the extended metaclass. In this case, only blocks with the stereotype can be created as instances of Block.

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