Sample Exam – Questions
Sample Exam set A
Version 1.2

ISTQB® Model-Based Testing Syllabus Foundation Level
Compatible with Syllabus version 1.1

International Software Testing Qualifications Board

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Acknowledgements

Revision History

Version	Date	Remarks
Final Release V1.2	2024/02/23	Final Release – compatible with Syllabus CT-MBT v1.1
Final release v1.1	2015/10/23	Final release

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Introduction

Purpose of this document

The example questions and answers and associated justifications in this sample exam have been created by a team of subject matter experts and experienced question writers with the aim of:

- Assisting ISTQB® Member Boards and Exam Boards in their question writing activities
- Providing training providers and exam candidates with examples of exam questions

These questions cannot be used as-is in any official examination.

Note, that real exams may include a wide variety of questions, and this sample exam ***is not*** intended to include examples of all possible question types, styles or lengths, also this sample exam may both be more difficult or less difficult than any official exam.

Instructions

In this document you may find:

- Questions[1], including for each question:
    - Any scenario needed by the question stem
    - Point value
    - Response (answer) option set
- Additional questions, including for each question [does not apply to all sample exams]:
    - Any scenario needed by the question stem
    - Point value
    - Response (answer) option set

- *Answers, including justification are contained in a separate document*

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[1] In this sample exam the questions are sorted by the LO they target; this cannot be expected of a live exam.

Questions

Question #1 (1 Point)
Which one of the following statements is the best definition of model-based testing?

a) A test technique using models to generate automated scripts.
b) A test design approach that uses state transition diagrams to design test cases.
c) Acceptance testing using business process models.
d) Testing based on or involving models.

Select ONE option.

Question #2 (1 Point)
A test team has decided to apply an MBT approach for a large banking system project at the system testing level.

Which one of the following statements describes a benefit of MBT you may expect for any kind of project?

a) MBT implies the generation of test scripts for automated test execution, which will reduce execution time and decrease the number of tester errors during test execution.
b) The test team creates graphical MBT models and reviews them with business analysts to contribute to a common understanding of the requirements.
c) The maintenance of the automated test scripts is now fully automated when changes to the MBT models have been done by the test team.
d) MBT reduces the costs of test design, because the test team applies test selection criteria on existing system design models to generate various test suites covering the project test objectives.

Select ONE option.

Question #3 (1 Point)
Which one of the following statements best reflects realistic expectations from introducing MBT into the software development lifecycle?

a) MBT users do not need to understand test techniques because test generation with MBT is fully automated.
b) Carefully introducing changes to the whole test process when introducing MBT, including test team training, helps to obtain measurable progress.
c) Adding an MBT tool without change in the existing organization and/or test process is an effective approach.
d) Since reuse of a system design model is possible in MBT, after small investment, the usage of MBT in a development process is almost for free.

Select ONE option.

Question #4 (1 Point)

An MBT approach is used in a project. Which statement below regarding MBT activities is most correct?

a) MBT modeling activities should start as soon as possible, but not before having finished the detailed system design.
b) MBT models reflect the system requirements, but do not consider the project test objectives.
c) MBT activities in a test process should follow a strictly sequential order.
d) Test selection criteria are used to drive test generation from the MBT model.

Select ONE option.

Question #5 (1 Point)

Which one of the following items are artifacts that can be generated from an MBT model?

a) Test basis, test cases and defect reports.
b) Test cases, test suites and traceability matrix between generated tests and requirements.
c) Test cases, test suites and test strategy.
d) Test cases, defect reports and process guidelines.

Select ONE option.

Question #6 (1 Point)

Which one of the following statements best reflects the impact of MBT on software development lifecycles?

a) MBT keeps existing testing roles but it amends their tasks with specific MBT activities.
b) MBT has no impact on the software development lifecycle.
c) MBT requires a new role to manage the MBT-specific activities.
d) MBT requires a separate process independent of the software development lifecycle.

Select ONE option.

Question #7 (1 Point)

Suppose a project team is using use case diagrams for business analysis. Now the project manager proposes model-based testing to improve testing.

Which one of the following statements is the best analysis made by the project manager related to the impact of MBT on requirements engineering (RE) activities?

a) RE activities will not change. The major impact on RE is the fact that MBT models will support validation of requirements by modeling the system from a testing perspective.
b) RE activities will not change. The major impact is that requirements analysis is now performed by the skilled MBT analyst replacing the business analyst.
c) RE activities will not change. The major impact is that MBT models are replacing system development models.
d) RE activities will change. The requirements analysis activity is not required anymore, because MBT analysis and design is sufficient to analyze the requirements.

Select ONE option.

Question #8 (1 Point)

The given workflow diagram describes an ISTQB certification. It shows the behavior of the exam taker, who attends the training course and/or prepares for the exam at home, then takes the exam and gets the certificate.
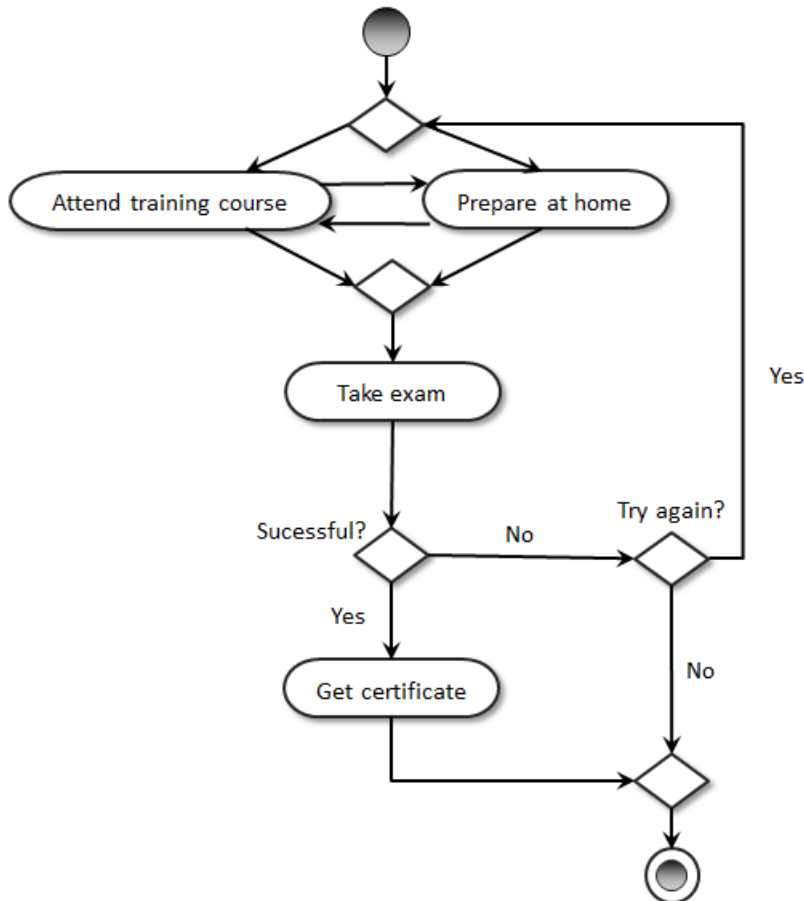
Which one of the following statements corresponds to the workflow described in the model?

a) The exam taker has to attend the training and to prepare individually at home to be able to pass the exam.
b) After failing the exam, the exam taker willing to repeat the exam has to attend the training course again.
c) Irrespective of the result, the exam taker may repeat the exam an unlimited number of times.
d) It is possible to get the certificate without attending the training course.

Select ONE option.

Question #9 (1 Point)

The given state machine shows the behavior of a beverage dispenser, e.g., for soft drinks or coffee. It shows the functional interaction between a user of the dispenser, who can switch the dispenser on and select a beverage, and the dispenser that can request more money if an insufficient amount of money has been inserted. The model should be used for model-based testing of the beverage dispenser.
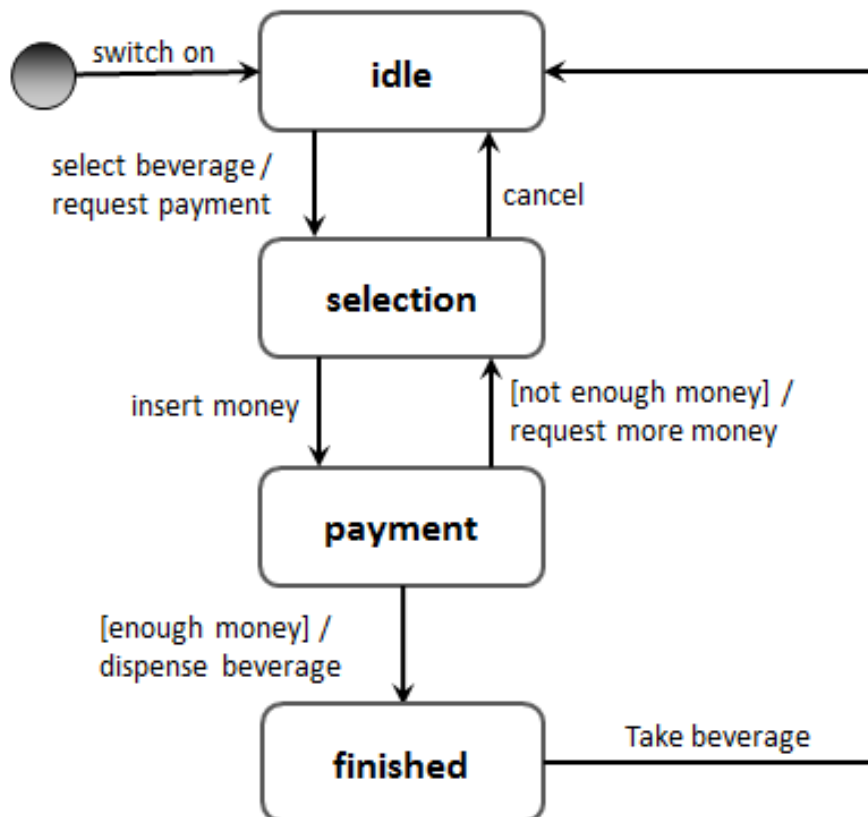
A reviewer of the model created four comments against the model. Which one of the following comments is correct?

a) After selecting a beverage and inserting an insufficient amount of money, the model does not require that money is returned.
b) After selecting the beverage, the user always has to insert an infinite amount of money without getting the selected beverage.
c) After selecting the beverage and paying for it, the user cannot take the beverage from the dispenser.
d) After selecting the beverage and canceling the choice, the user has to switch the beverage dispenser on and off again.

Select ONE option.

Question #10 (1 Point)

The following models show two different viewpoints of a coffee dispenser.
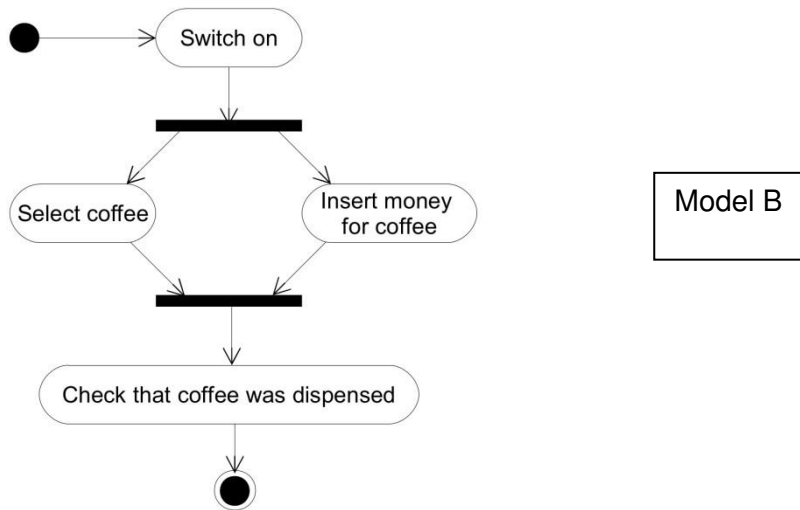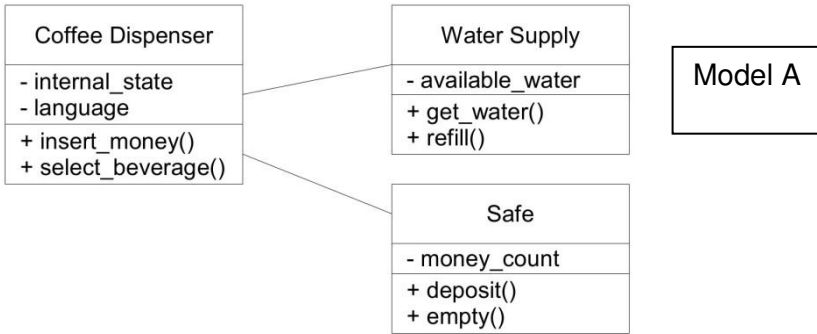
Please select the one correct option below.

a) Model A is a structural description of test cases and Model B is behavioral description of the system.

b) Model A is a behavioral description of the system and Model B is structural description of the environment.

c) Model A is a structural description of the system and Model B is a behavioral description of test cases.

d) Model A is a structural description of the environment and Model B is a behavioral description of the system.

Select ONE option.

Question #11 (1 Point)

Suppose the following test objectives are specified in a project:

> TO-1) validate the business workflows.
> TO-2) verify whether all system interfaces exist as specified.
> TO-3) validate that the system corresponds to the needs of different user profiles.
> TO-4) verify the correct implementation of input data ranges.

Which one of the following combinations between test objectives and MBT model characteristics is correct?

a) TO-1 requires a structural system model.
b) TO-2 requires a behavioral test model.
c) TO-3 requires a behavioral environment model.
d) TO-4 requires a structural environment model.

Select ONE option.

Question #12 (1 Point)

In MBT, behavioral models are often used for test generation. Which one of the following diagrams is a behavioral model?

a) A state transition diagram.
b) A class diagram.
c) A deployment diagram.
d) A package diagram.

Select ONE option.

Question #13 (1 Point)

You have to test the performance of an IT system and you are asked to recommend a model to derive tests from. Which one would you first recommend?

a) A usage model, as that model allows representing the prospective usages of the system.
b) A decision table, as that table allows representing the rule sets of the IT system.
c) A state transition diagram, as that model allows representing normal, maximum and overload states of the system.
d) A structural model of source code, as that model allows representing non-functional requirements.

Select ONE option.

Question #14 (1 Point)

As a reviewer, you have to check whether an MBT model is adequate for the given test objective. How is the corresponding quality criterion defined?

    a) Syntactic quality,
    b) Semantic quality,
    c) Pragmatic quality,
    d) Portability quality.

Select ONE option.

Question #15 (1 Point)

Which one of the following scenarios corresponds to a common mistake MBT newcomers tend to commit?

    a) MBT is used in combination with manual test execution.
    b) The MBT model for system testing tries to describe the system under test in complete detail.
    c) The MBT model is developed on the basis of the test objectives.
    d) Different test suites are generated from the same MBT model with various test selection criteria.

Select ONE option.

Question #16 (1 Point)

Which one of the following statements about linking requirements to MBT models is most correct?

    a) Linking requirements to models makes it easier to layout the MBT model.
    b) Linking requirements to models makes it possible to generate test cases for selected requirements.
    c) The link between requirements and model elements facilitates root cause analysis in case of errors in the model.
    d) Linking requirements to MBT models facilitates debugging activities at the code level.

Select ONE option.

Question #17 (1 Point)

In a project regarding the development of a new banking system, a model-based testing approach based on business process modeling with BPMN is used. MBT modeling guidelines are defined for the project.

Which one of the following topics is most probably found in modeling guidelines for such MBT project?

    a) A full description of UML diagrams and model elements.
    b) Proposed modeling patterns for typical business flows.
    c) Naming rules based on the naming conventions defined in coding guidelines.
    d) Sample drafts of test cases relevant for testing the application.

Select ONE option.

Question #18 (1 Point)

The reuse of existing design models is usually appreciated by industry as it lowers costs. Consider the following examples where an existing design model shall be used as input to MBT instead of developing completely new MBT models.

Which one of the following examples shows a best-practice reuse of an existing model?

 a) Model-driven engineering was used in the project to automatically derive the implementation of the system from a model. A separate MBT model is not necessary and this model will be reused to generate all test cases to test the system.
 b) A requirements model of the business processes has been developed during the business analysis phase. The test team decided to reuse and adapt it for model-based testing.
 c) A model of the architecture of the system, describing component interaction at a low level, is available from the development team. The test team decided to reuse it in the context of model-based testing for user acceptance testing.
 d) A detailed implementation model was used to derive the implementation of a system. The model is accessible to the MBT tool and can be used to check that the implementation correctly implements the requirements.

Select ONE option.

Question #19 (1 Point)

Consider the following tools supporting the MBT modeling process. Which tool provides support for writing syntactically correct MBT models?

 a) UML modeling tool.
 b) State/transition diagram editor.
 c) Domain-specific language editor.
 d) All of the above.

Select ONE option.

Question #20 (1 Point)

Which one of the following statements regarding iterative model development, review and validation is true?

 a) At least some parts of the MBT model must be specified to its final degree of detail, before the stakeholders can perform their first review.
 b) Regular reviews of the MBT model are sufficient to assure that tests generated from the MBT model will fulfill the expectations.
 c) Iterative model development allows the MBT tester to start specifying tests early in the development process.
 d) Validation of the MBT model replaces requirements validation.

Select ONE option.

Question #21 (1 Point)

Which one of the following definitions best describes test selection criteria in the MBT context?

   a) Model-based testers apply test selection criteria to determine the test cases ready for review.
   b) Test selection criteria are specific to MBT, because they are the only possibility to avoid test case explosion.
   c) Model-based testers apply test selection criteria to guide the generation of test cases or to select test cases in order to limit the size of a test suite.
   d) Test selection criteria are part of the test adaption layer for automated test execution in MBT.

Select ONE option.

Question #22 (1 Point)

Which one of the following definitions best describes model coverage in the MBT context?

   a) Model coverage characterizes the degree to which model elements are planned to be or have been exercised by a test suite.
   b) Model coverage characterizes the degree to which the previously defined requirements are covered by the MBT model.
   c) Model coverage defines a random coverage of the model expressed as percentage.
   d) Model coverage is a white box test selection criteria measured during test execution.

Select ONE option.

Question #23 (1 Point)

The following list enumerates different statements about MBT test case selection. Two of them do NOT describe coverage-based test selection. Which ones?

   a) The selected tests cover the requirements linked to model elements.
   b) The selected tests check all transitions in the state transition diagram except one.
   c) The selected tests cover specific, previously defined scenarios.
   d) The selected tests cover all tests that require some specific equipment.
   e) The selected tests check all equivalence partitions defined for a given data domain.

Select TWO options.

Question #24 (1 Point)

The system under test is an online booking portal. From the MBT model shown in the figure, several sets of test cases can be selected.
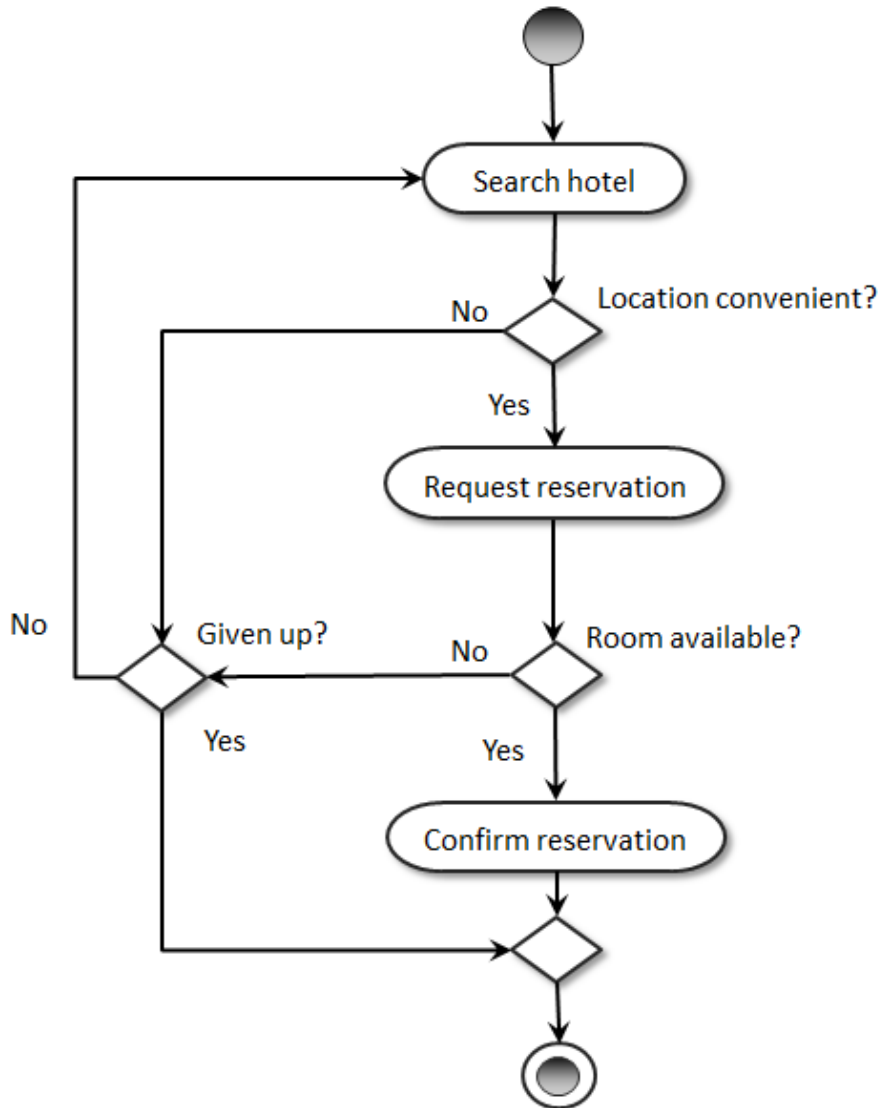
What is the minimum number of test cases required to obtain 100% branch coverage?

a) 1
b) 2
c) 3
d) 4

Select ONE option.

Question #25 (1 Point)

Which one of the following statements is a typical combination of test selection criteria for an MBT model?

    a) Path coverage on structural models.
    b) Transition coverage on business process models.
    c) Gateway coverage on textual models.
    d) Transition coverage on state transition diagrams.

Select ONE option.

Question #26 (1 Point)

MBT does not replace other test techniques, but supports them.

Which two of the following statements can be considered as correct regarding this support?

    a) It is possible to model boundary values in the MBT model.
    b) MBT allows the combination of behavioral MBT models with decision tables.
    c) Use case testing without models is impossible.
    d) MBT only supports verification activities, but no validation activities.
    e) State machine modeling is the only way to use MBT.

Select TWO options.

Question #27 (1 Point)

Tooling plays an important role in model-based testing and influences the degree of test artifact generation.

Which one of the following statements regarding automated test artifact generation is most correct?

    a) MBT automatically implies tool-based test artifact generation.
    b) Even in a completely automated MBT approach, some post-processing of the generated test artifacts is required prior to test execution.
    c) Even if a test artifact generator is used, manual test case selection may add value to the test process.
    d) Only test cases can be automatically generated from an MBT model.

Select ONE option.

Question #28 (1 Point)

The following MBT model describes the main user activities of a change request management system:
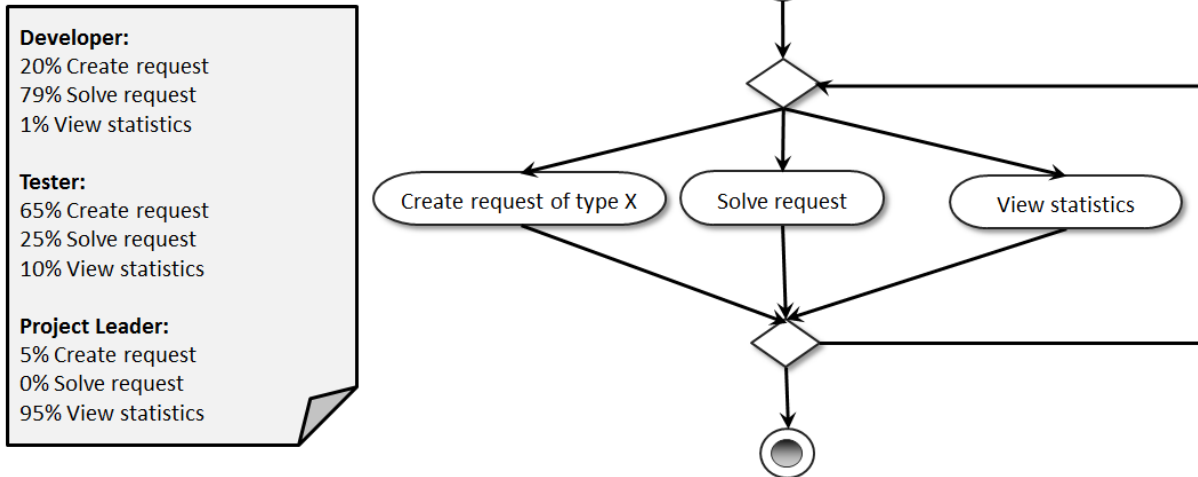
Which of the following statements regarding test selection criteria is correct?

a) To test the usage profiles given in the note, stochastic test case selection is not useful.
b) 100% transition coverage is the best test selection criterion to check the change request management workflow.
c) Scenario-based test case selection allows you to select specific sequences from the model.
d) It is possible to achieve 100% requirements coverage with the given information.

Select ONE option.

Question #29 (1 Point)

Which one of the following statements regarding test selection criteria applied to MBT models in practice is most correct?

a) In MBT, testers avoid combining test selection criteria.
b) Combining test selection criteria always decreases the number of test cases.
c) Combining test selection criteria may increase the number of test cases.
d) The correct way to combine test selection criteria is to apply full requirements coverage first and then another criterion.

Select ONE option.

Question #30 (1 Point)

Which one of the following statements best defines online model-based testing?

a) A model-based testing approach whereby test cases are generated and executed simultaneously.
b) The term "Online MBT" covers all model-based testing approaches where the generated test cases are automatically executed.
c) Online MBT refers to model-based testing approaches using semi-automated tool support.
d) A model-based testing approach whereby test cases are generated using project-based coverage criteria.

Select ONE option.

Question #31 (1 Point)

A test team decided to use an MBT approach in the context of an HRMS – Human Resources Management System - testing project. They first produce an MBT model reflecting the main business processes with high level business actions, but without detailed test actions and concrete data values.

Which one of the following statements regarding high-level and low-level test cases is most true in this project context?

a) The test team can generate low-level test cases from this MBT model and execute them automatically without further adaptation.
b) In order to obtain low-level test cases from this MBT model, additional MBT tools are required.
c) The generated test cases are sufficiently detailed if executed manually by a certified tester.
d) The test team can provide input for the test adaptation layer required to generate the low-level test cases.

Select ONE option.

Question #32 (1 Point)

Which one of the following statements regarding MBT methods for test execution is true?

a) MBT is not used with manual test execution.
b) When using offline MBT test execution, generated test cases can be exported to the test management tool.
c) Online test execution is generally applied with manual test execution.
d) Offline execution implies test generation and test execution simultaneously.

Select ONE option.

Question #33 (1 Point)

The test team created a first version of an MBT model for testing a car navigation system:
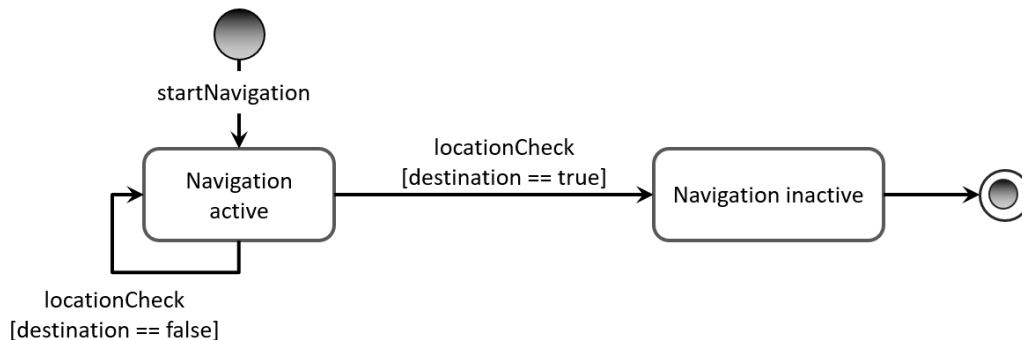
Now, a new requirement turned up. It shall be possible to interrupt the navigation in order to change the destination or to abort the navigation. The test team decided to add a new transition triggered by the event "userInterrupt", plus a new state "Navigation interrupted" to the existing MBT model. Therefore, the test team created a second version of the MBT model:
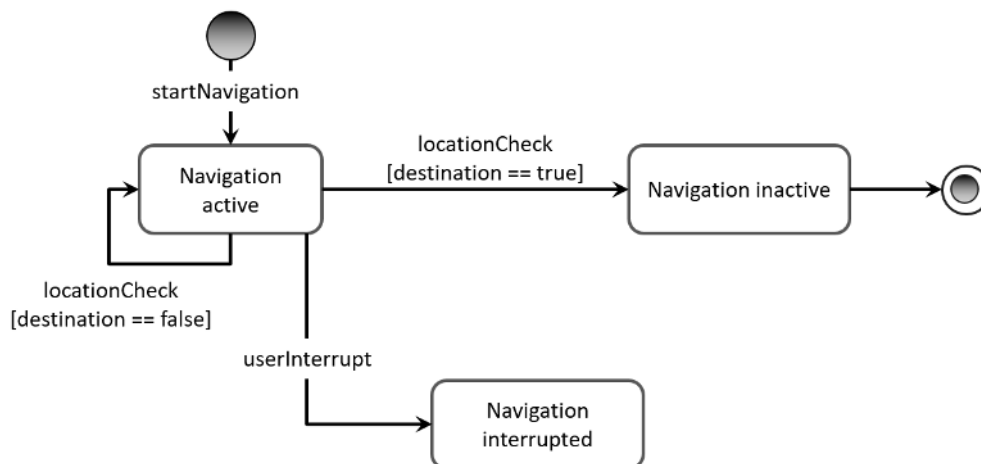
Which two of the following combination of adaptations of this second MBT model are correct in order to cover the new requirement in the MBT model?

a) Add a transition "abortNavigation" between the state "Navigation active" and the end state.
b) Add a transition with trigger "changeDestination" between the existing state "Navigation inactive" and the existing state "Navigation active".
c) Add a transition with trigger "abortNavigation" between the new state "Navigation interrupted" and the existing state "Navigation inactive".
d) Add a transition with trigger "changeDestination" between the new state "Navigation interrupted" and the existing state "Navigation active".
e) Add a guard "False" to the transition between the state "Navigation active" and the state "Navigation interrupted".

Select TWO options.

Question #34 (1 Point)

A test team is using MBT to generate manual test scripts at system testing level.

Which one of the following statements regarding MBT test adaptation for test execution is most true?

   a) In the case of manual test execution, testers need to read the MBT model to proceed to manual test execution.
   b) If high-level test cases are generated from the MBT model, a test automation engineer has to develop the test adaptation layer prior to any test execution.
   c) In the case of automated test execution, the test automation engineer adds test adaptation layer information to the MBT model to enable automated generation of low-level test cases.
   d) In general, specifying a test adaptation layer helps separating platform- and implementation-specific aspects from business workflows and rules to be tested.

Select ONE option.

Question #35 (1 Point)

Which one of the following expected benefits of MBT may best lead to a financial benefit for the test effort?

   a) Process automation and reuse effects.
   b) Higher number of test cases automatically generated from the MBT model compared to a set of manually created test cases.
   c) Systematic coverage of the MBT model.
   d) Reducing the time-to-market.

Select ONE option.

Question #36 (1 Point)

A company decided to deploy an MBT approach to test an embedded satellite flight guidance system, at the system testing level for functional testing. The motivation for using MBT is to improve the testing process.

Which one of the following characteristics of the MBT approach is the most relevant in this context?

   a) The company combines various types of test selection criteria to achieve test objectives, and monitors requirement coverage through MBT tests.
   b) In the case where models for code generation are used, these models are fully reused for MBT without modification.
   c) All tests are executed manually.
   d) The MBT models are limited to structural aspects.

Select ONE option.

Question #37 (1 Point)

A company decided to use MBT for acceptance testing of a transport ticketing system.

Which one of the following metrics would a test manager use to best measure the progress of MBT activities?

a) The number of requirements managed and traced in the MBT model, and requirements coverage (percentage) by generated test cases
b) The effort (in person-days) done for code development.
c) The number of bugs discovered in the component testing phase.
d) The effort (in person-days) spent on developing test models and applying test selection criteria.

Select ONE option.

Question #38 (1 Point)

An MBT approach is deployed in a project. Which one of the following statements describes good practice?

a) Deploying MBT with manual test execution requires additional risk management.
b) Configuration management does not have to cover the MBT models, if the generated test cases are controlled.
c) For projects applying continuous integration, MBT should be used for higher test levels only (system testing, user acceptance testing).
d) Establishing traceability between requirements and MBT model elements is part of an MBT approach.

Select ONE option.

Question #39 (1 Point)

Cost factors of MBT relate to initial costs and running costs. Which one of the following is an initial MBT cost?

a) MBT modeling and model validation efforts.
b) MBT tool evaluation.
c) Test adaptation efforts.
d) Tooling support costs.

Select ONE option.

Question #40 (1 Point)

An MBT approach is used for a hospital management software project at the system testing level. A test management tool and a test automation framework are used in the project. The requirements are stored in a spreadsheet.

Which one of the following statements regarding MBT tool integration describes a typical situation?

a) The MBT tool exports the generated test cases to the test management tool.
b) To generate automated test scripts for the test automation framework, both tools must be from the same vendor.
c) Requirements are specified in the MBT tool and synchronized with the test management tool.
d) The test automation framework automatically mirrors the test results back into the model.

Select ONE option.