Sample Exam – Questions

Sample Exam set A
Version 2.2

ISTQB® Automotive Software Tester Syllabus Specialist

Compatible with Syllabus version 2018

International Software Testing Qualifications Board

German Testing Board

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Document Responsibility

The ISTQB® Examination Working Group is responsible for this document.

Acknowledgements

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Revision History

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2.2	May 12, 2023	Bump to match Answer document version
2.1.1	May 25, 2021	Update of Copyright Notice
2.1	November 12, 2019	Layout update
2.0	July 4, 2018	Updated in connection with ISTQB release
1.0	2015	First edition

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Introduction

Purpose of this document

The sample questions and answers and associated justifications in this sample exam set 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.

These questions cannot be used as-is in any official examination, but they should serve as guidance for question writers. Given the wide variety of formats and subjects, these sample questions should offer many ideas for the individual Member Boards on how to create good questions and appropriate answer sets for their examinations.

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)
What are the six stages in the system product life cycle according to ISO/IEC 24748?

a) Concept, Development, Acceptance, Utilization, Support, Retirement
b) Concept, Development, Production, Release, Support, Retirement
c) Concept, Implementation, Production, Utilization, Support, Retirement
d) Concept, Development, Production, Utilization, Support, Retirement

Select ONE option.

Question #2 (1 Point)
Which of the following statements is TRUE?

a) e)   The release recommendation of the Certified Automotive Software Tester does NOT have any influence on the release
b) The release provisions of the test object do NOT have any influence on the work of the Certified Automotive Software Tester
c) The release recommendation of the Certified Automotive Software Tester does NOT have any influence on the level of maturity of the corresponding software
d) The release recommendation does NOT have any influence on the scope of delivery

Select ONE option.

Question #3 (1 Point)
With which of the measures listed below can the objectives of an increasingly complex software development project be best achieved in the short run?

a) By insourcing an outsourced projects
b) By using effective methods and processes
c) By ensuring efficient qualification of employees
d) By outsourcing of complex projects

Select ONE option.

Question #4 (1 Point)
Which Automotive SPICE® process is particularly important from the point of view of an employee in the role of a Certified Automotive Software Tester?

a) System requirements analysis
b) Configuration management
c) Software qualification test
d) Project management

Select ONE option.

Question #5 (1 Point)

Which of the following is a dimension defined in Automotive SPICE®?

    a) Process dimension
    b) Time dimension
    c) Resource dimension
    d) Objective dimension

Select ONE option.

Question #6 (1 Point)

        Work products have been reviewed, established and have been re-leased.
          AND
        Process activities are planned towards objectives, monitored and adjusted.
          AND
        Requirements for work products are defined.

According to Automotive SPICE® 3.x, which Software Test Qualification Process Capability Level is characterized by a combination of the above statements?

    a) Capability level 0
    b) Capability level 1
    c) Capability level 2
    d) Capability level 3

Select ONE option.

Question #7 (1 Point)

Imagine you are participating in an Automotive SPICE® – Assessment in your role as integration tester and you are receiving the information that your process has been assessed as "L," using the process at-tribute PA 1.1.

Which ONE of the following options is correct?

    a) "L" not fulfilled
    b) "L" partly fulfilled
    c) "L" largely fulfilled
    d) "L" fully fulfilled

Select ONE option.

Question #8 (1 Point)

Which of the following statements about regression test strategy is TRUE, according to Automotive SPICE®?

    a) The regression test strategy defines the test stage specific test environments and which tests are to be executed in which test environments
    b) The regression test strategy defines the selection of appropriate test cases for regression testing, including a set of test cases selected as a basis set to be executed
    c) The regression test strategy typically defines the cross-test stage procedure for the selection of regression tests
    d) The regression test strategy is an abstract description of the planned test levels and how to proceed within those test stages. It is valid for one organization or one program, for one or more projects

Select ONE option.

Question #9 (1 Point)

Which traceability requirements are referenced in Automotive SPICE® 3.x?

    a) Traceability of the testers' working hours to the executed test cases
    b) Traceability of the specified test cases to the test results
    c) Traceability of interface description to the specified maintainability tests
    d) Traceability of the customer requirements to the specified integration tests

Select ONE option.

Question #10 (1 Point)

You are the test manager for a tier-1-supplier and you are responsible for defining the component verification strategy and criteria according to Automotive SPICE® (SWE.4). The components to be verified are safety relevant ones (up to ASIL-B) as well as non-safety relevant components.

According to the process requirements of the OEM, the supplier should confirm MISRA-compliance and comply with the guidelines for functional safety.

Which of the following measures is INAPPLICABLE as part of a suit-able verification strategy?

    a) Dynamic Black-Box tests of the components with the objective of achieving 100% requirements coverage for the safety relevant components
    b) Tool-supported measuring of the condition coverage of the tested components, to ensure 100% plausibility of the test results
    c) Tool-supported static analysis to achieve MISRA compliance of the source code of the components
    d) Code reviews to check the understandability and correctness of comments in the source code of the components

Select ONE option.

Question #11 (1 Point)

Which statement BEST describes the contribution of an Automotive Software tester to the safety culture?

    a) The tester ensures that all project team members contribute to the safety culture
    b) The tester checks if all processes required for functional safety activities are implemented
    c) The tester contributes to the development phases of the safety lifecycle
    d) The tester carries out all activities that are related to functional safety

Select ONE option.

Question #12 (1 Point)

Which of the following statements regarding ASIL is TRUE?

    a) The ASIL of a hazard is the result of the hazard analysis and risk assessment
    b) ASIL A represents the highest criticality, ASIL D the lowest one
    c) An ASIL is assigned to all hazards classified
    d) ASIL stands for "Automotive Security Integrity Level"

Select ONE option.

Question #13 (1 Point)

Which two volumes of ISO 26262 are the MOST IMPORTANT ones for the Automotive Software tester?

    a) Volume 4 (Product development at the system level), volume 6 (Product development at the software level)
    b) Volume 3 (Concept phase) and volume 6 (Product development at the soft-ware level)
    c) Volume 2 (Management of functional safety) and volume 6 (Product development at the software level)
    d) Volume 5 (Product development at the hardware level) and volume 6 (Product development at the software level)

Select ONE option.

Question #14 (1 Point)

Which of the following statements regarding safety aspects is TRUE?

    a) For the development of automotive E/E systems, ISO 26262 describes requirements to ensure functional safety
    b) Functional safety and cybersecurity of automotive E/E systems contradict each other
    c) Functional safety of an automotive E/E system can be assumed if unreasonable risks for people can be avoided during the normal operation of this system
    d) For the development of automotive E/E Systems, ISO 26262 describes the requirements to ensure cybersecurity

Select ONE option.

Question #15 (1 Point)

Which of the following statements BEST describes the contribution of an Automotive Software tester in the safety lifecycle?

- a) The tester executes tests related to functional safety primarily during the product development phase
- b) The tester executes tests related to functional safety primarily during the concept phase
- c) The tester executes tests related to functional safety to the same extent in all phases of the safety lifecycle
- d) The tester executes tests related to functional safety primarily during the post-release phase, while in production

Select ONE option.

Question #16 (1 Point)

ISO 26262 recommends the use of specific test design techniques and test types depending on the Automotive Safety Integrity Level (ASIL).

Which statement is TRUE?

- a) For safety requirements with a higher ASIL, more extensive testing must be done in comparison to safety requirements with a lower ASIL, as the number of recommended test design techniques and test types is higher
- b) For safety requirements with a higher ASIL, more extensive testing must be done in comparison to safety requirements with a lower ASIL, as the recommended test design techniques and test types lead to more test cases
- c) For safety requirements with a higher ASIL, a more extensive testing in comparison to safety requirements with a lower ASIL often occurs, as the number of recommended test design techniques and test types doubles with each ASIL
- d) For safety requirements with a higher ASIL, more extensive testing in comparison to safety requirements with a lower ASIL often occurs, as the recommended test design techniques and test types lead to more test cases

Select ONE option.

Question #17 (1 Point)

The following table shows an ISO 26262 methods table regarding code coverage metrics.

Methods		ASIL			
		A	B	C	D
1a	Statement coverage	++	++	+	+
1b	Branch coverage	+	++	++	++
1c	Modified condition decision coverage (MC/DC)	+	+	+	++

Which of the following decisions documented in the test plan is consistent with the above methods table?

    a) For ASIL A, branch coverage is used and statement coverage is not used, as 100% branch coverage implies 100% statement coverage
    b) For ASIL B, statement coverage is used and branch coverage is not used, as it is positioned at a higher position in the table and is therefore more important
    c) For ASIL D, MC/DC coverage is used as it is the only possible option
    d) For ASIL B, statement coverage is used and branch coverage is not used, as 100% statement coverage implies 100% branch coverage

Select ONE option.

Question #18 (1 Point)

Which of the following statements regarding AUTOSAR is TRUE?

    a) AUTOSAR defines a closed architecture, which can only be used by the companies, who are members of the AUTOSAR consortium
    b) AUTOSAR is not compliant to international standards
    c) AUTOSAR supports only AUTOSAR-control units
    d) AUTOSAR standardizes the basic functionality of the software of automotive control devices

Select ONE option.

Question #19 (1 Point)

Which of the following statements regarding AUTOSAR is TRUE?

    a) The integration test of the AUTOSAR software in a virtual test environment cannot be implemented, as real hardware is necessary
    b) The RTE is a suitable test interface for the system test of the software
    c) The AUTOSAR acceptance test must be performed to prove the AUTOSAR conformity of the software
    d) AUTOSAR-specific tests are limited to the software of a single control device

Select ONE option.

Question #20 (1 Point)

Which of the following statements regarding the objectives of Automotive SPICE® and the ISO 26262 is NOT TRUE?

  a) Automotive SPICE® has the objective of rating the capability of the development processes of the sub-contractors by using assessments
  b) ISO 26262 has the objective of rating the capability of the development processes of the supplier by using assessments
  c) ISO 26262 has the objective of avoiding risks from systematic errors during development by specifying suitable requirements and processes
  d) ISO 26262 has the objective of defining requirements for the processes and methods to be used by the tester in the development of E/E-Systems

Select ONE option.

Question #21 (1 Point)

Which of the following statements is TRUE?

  a) Automotive SPICE® defines the test techniques to be used for each test level
  b) ISTQB® defines the test techniques to be used depending on the test levels
  c) ISO 26262 and Automotive SPICE® define method tables for all mentioned test levels
  d) Depending on the ASIL, the method tables of the ISO 26262 recommend test techniques that shall be used

Select ONE option.

Question #22 (1 Point)

Which items are part of an automotive specific test environment?

  a) Control computer, simulation software, data logger
  b) Real-time capable computer, network accesses, report database
  c) Measuring devices, specification documents, laboratory
  d) Data management tool, operating system, environment model

Select ONE option.

Question #23 (1 Point)

Which interfaces are used to collect and distribute information in an electronic control unit (ECU)?

  a) Environment model, bus system and diagnosis interface
  b) Analogue and digital inputs, watchdog and internal data memory
  c) Analogue and digital inputs, supply voltage and diagnosis interface
  d) Analogue and digital inputs, bus system and diagnosis interface

Select ONE option.

Question #24 (1 Point)

Which of the statements is true?

a) In a closed-loop-system, the output signals of the test object are directly linked to the inputs of the test object
b) In a closed-loop-system, the output signals of the test object are linked to the inputs of the test object via an environment model
c) In an open-loop-system, the output signals of the test object are directly linked to the inputs of the test object
d) In an open-loop-system, the output signals of the test object are linked to the inputs of the test object via an environment model

Select ONE option.

Question #25 (1 Point)

Which of the following statements is NOT true?

a) In the Model-in-the-Loop (MiL) test environment, the test object is readable for humans
b) In the Model-in-the-Loop (MiL) test environment, the test object exists as a model
c) In the Model-in-the-Loop (MiL) test environment, additional hardware is necessary
d) A Model-in-the-Loop (MiL) test environment is used early in the development process

Select ONE option.

Question #26 (1 Point)

Which of the following statements is NOT true?

a) In the Software-in-the-Loop (SiL) test environment, additional hardware is necessary
b) In the Software-in-the-Loop (SiL) test environment, the test object exists as compiled object code
c) In the Software-in-the-Loop (SiL) test environment, a wrapper is necessary to stimulate and observe inputs and outputs
d) In the Software-in-the-Loop (SiL) test environment, the number of access points is limited by the wrapper

Select ONE option.

Question #27 (1 Point)

Which tests are typically performed in a Software-in-the-Loop (SiL) test environment?

a) Tests of the response time for diagnosis requests
b) Tests for electromagnetic compatibility
c) Performance tests of the target hardware
d) Interface and integration tests

Select ONE option.

Question #28 (1 Point)

Which three items are all parts of a Hardware-in-the-Loop (HiL) test environment?

- a) Test case generator, rest bus simulation, power supply
- b) Breakout box, software compiler, real parts
- c) Power supply, real-time capable computer, electric error simulation
- d) Electric error simulation, signal processing, processor simulation

Select ONE option.

Question #29 (1 Point)

Which statement regarding the test environment is true?

- a) For integration tests is only the Hardware-in-the-Loop (HiL) test environment suitable
- b) For component tests a Model-in-the-Loop (MiL) test environment and Soft-ware-in-the-Loop (SiL) test environment are both suitable
- c) For system tests, a Model-in-the-Loop (MiL) and Hardware-in-the-Loop (HiL) test environments are both suitable.
- d) Any XiL test environment can be used on every test level

Select ONE option.

Question #30 (1 Point)

Which statement regarding a Model-in-the-Loop (MiL) test environment is most likely TRUE?

- a) The test execution duration of the simulation depends on the complexity of the model and the computing power of the test system
- b) Access to bus and diagnosis interfaces are implemented in the environment
- c) The environment model provides extensive implementations of physical processes (like for example electromagnetic compatibility or cable breaks)
- d) The simulation of the Model-in-the-Loop (MiL) test environment can only be started and stopped. Pausing the simulation is not possible

Select ONE option.

Question #31 (1 Point)

Which test is typically performed at a Component Hardware-in-the-Loop (HiL) test environment?

- a) Test of the overall system requirements for the vehicle
- b) Test of the driving behavior of the chassis
- c) Test of the electronic control unit functions for correct behavior
- d) Test of the data exchange between the electronic control units

Select ONE option.

Question #32 (1 Point)

Which statement is TRUE?

a) The cost of a detected error in the test object is highest if the error is found in the Model-in-the-Loop (MiL) test environment
b) A Hardware-in-the-Loop (HiL) test environment is a more realistic test environment than a Software-in-the-Loop (SiL) test environment
c) The amount of effort for design, commissioning and maintenance of a Hardware-in-the-Loop (HiL) test environment is lower than a Software-in-the-Loop (SiL) test environment
d) Hardware components are tested in a Software-in-the-Loop (SiL) test environment

Select ONE option.

Question #33 (1 Point)

You are a member of a test team and you are to test the software code of an electronic control unit. The electronic control unit has been pro-vided as a model and as a development board by the development team, as no electronic control unit hardware is available yet. The test is supposed to ensure the mechanisms for error detection and error handling in the electronic control unit work properly.

Which test environment is to be preferred in this situation given the test types?

a) A Hardware-in-the-Loop (HiL) test environment, as errors for the test of the error handling can only be simulated in this test environment
b) A Software-in-the-Loop (SiL) test environment, as development boards are available and error detection is to be tested
c) A Model-in-the-Loop (MiL) test environment, as no hardware is available yet and the test object is available as a model
d) If no electronic control unit hardware is available, the software cannot be tested

Select ONE option.

Question #34 (1 Point)

Which statement regarding coding standards is TRUE?

a) A coding standard defines the necessary test practices (e.g. test techniques, test logging)
b) A coding standard defines the necessary test specification languages (e.g. test automation, test case selection)
c) A coding standard defines the necessary development practices (e.g. commenting, naming conventions)
d) A coding standard defines the necessary modelling techniques (e.g. states, state transitions)

Select ONE option.

Question #35 (1 Point)

Which of the following statements regarding MISRA C:2012 is TRUE?

   a) Rules of the category required must not be neglected by the developer, even if he gives a reason
   b) The binding character of guidelines is predefined for every organization
   c) Rules of the category mandatory should avoid typical coding anomalies
   d) MISRA guidelines are fully testable by static analysis tools

Select ONE option.

Question #36 (1 Point)

The requirements for a car radio on system level are given below:

   1. After switching it on, the system shows the message "Welcome" for 3 seconds
   2. In a switched on state, the radio is in one of the states "active", "passive" or "in maintenance" and in a switched off state the last state is saved
   3. In a switched on state the radio function is engaged by pressing the button "Radio"
   4. If the CD function is engaged and no CD is in the drive, the system shows the message "No Disc"

Which of the following statements about the given quality criteria for requirements according to ISO/IEC/IEEE 29148 is TRUE?

   a) Requirement 1 is not verifiable
   b) Requirement 2 is not singular
   c) Requirement 3 is inconsistent
   d) Requirement 4 is not unambiguous

Select ONE option.

Question #37 (1 Point)

Which of the following statements regarding requirement based tests is CORRECT?

   a) Requirement based tests are only focused on the coverage of requirements and do not allow the use of intuitive or explorative tests
   b) Requirement based tests have the objective to test the requirements until they are consistent and complete
   c) Requirement based tests have the objective to cover requirements with test cases
   d) Requirement based tests verify the test object independently from the quality of the customer requirements for the fulfilment of customer requests

Select ONE option.

Question #38 (1 Point)

Which of the following statements is NOT a description of a fault injection test?

a) Fault injection tests insert faults in the behavior of external components to detect that the system can deal with erroneous situations
b) Fault injection tests insert faults in internal interfaces, e.g. as lost messages
c) Fault injection tests insert faults in the system specification, e.g. as too low parameters for the required performance
d) Fault injection tests insert faults in the operating unit that show as internal defects

Select ONE option.

Question #39 (1 Point)

What is especially important in the selection of test design techniques in the context of ISO 26262?

Choose the BEST POSSIBLE answer.

a) White-box-test design techniques should be preferred over black-box-test design techniques, as the tester can take advantage of knowledge of the code
b) The recommendation of the ISO 26262 for the identified ASIL is the decisive factor for the selection of the test design techniques
c) The combination of the suitability of the test basis and the test level together with a high risk of non-detected errors is the decisive factor for the test design techniques to be selected
d) Intuitive test design techniques should always be preferred over structure based test design techniques

Select ONE option.

Question #40 (1 Point)

Below is a decision with three single conditions (B1 AND B2) OR B3. The task for the tester is to design test cases according to the principle of the modified condition decision test (MC/DC).

The tester has already designed three test cases:

5. B1 = TRUE, B2 = TRUE, B3 = FALSE
6. B1 = FALSE, B2 = TRUE, B3 = FALSE
7. B1 = FALSE, B2 = TRUE, B3 = TRUE

Which of the following test cases is necessary to achieve 100% modified condition decision coverage?

a) B1 = TRUE, B2 = FALSE, B3 = TRUE
b) B1 = TRUE, B2 = TRUE, B3 = TRUE
c) B1 = FALSE, B2 = FALSE, B3 = FALSE
d) B1 = TRUE, B2 = FALSE, B3 = FALSE

Select ONE option.