Sample Exam

ISTQB® Foundation Level

2011 Syllabus

Version 2.9

International Software Testing Qualifications Board

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Exam Working Party: 2010 – 2017

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0. Introduction

0.1 Purpose of this document

This document contains a full sample exam following the rules described in the ISTQB Foundation Level Exam Structure and Rules document.

The sample questions, answer sets and associated justifications in this document have been created by a team of subject matter experts and experienced question writers with the aim of assisting ISTQB^{TM} Member Boards and Exam Boards in their question writing activities as well as people planning to take the ISTQB Foundation Level examination.

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. Furthermore training providers can use these questions as part of their training to prepare participants for the examination.

0.2 Instructions

The question and answer sets are organized in the following way:
- Learning Objective and K-level
- Question - including any scenario followed by the question stem
- Answer Set
- TRUE answer – including justification of the answers (The TRUE answer and justifications are contained in a separate document.)

0.3 General Information on the sample exam paper:

Number of questions: 40

Standard Duration of the examination: 60 minutes

Total number of marks possible: 40

Pass mark: 26 (or more)

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1. Questions "Fundamentals"

Question 1	LO-1.3.1	K2

Which of the following statements BEST describes one of the seven key principles of software testing?

Answer Set:

a) By using automated testing it is possible to test everything.

b) With sufficient effort and tool support, exhaustive testing is feasible for all software.

c) It is normally impossible to test all input/output combinations for a software system.

d) The purpose of testing is to demonstrate the absence of defects.

Justification

a) FALSE – Exhaustive test is impossible, regardless of it being manual or automated. (Section 1.3; Principle #2).

b) FALSE – Exhaustive testing is impossible, regardless of the amount of the effort put into testing (Section 1.4; Principle #2).

c) **TRUE** – Principle #2 (Section 1.3) states: "Testing everything (all combinations of inputs and preconditions) is not feasible except for trival cases."

d) FALSE - This statement is contradicting Principle #1(Section 1.3): Testing shows presence of defects: Testing can show that defects are present, but cannot prove that there are no defects.

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Question 2	LO-1.2.1	K1

Which of the following statements is the MOST valid goal for a test team?

Answer Set:

a) To determine whether enough component tests were executed within system testing.

b) To detect as many failures as possible so that defects can be identified and corrected.

c) To prove that all possible defects are identified.

d) To prove that any remaining defects will not cause any failures.

Justification

a) FALSE – Component testing is not part of System testing. (Section 2.2.1 and 2.2.3)

b) **TRUE** – This is the main role of a test team. (Section 1.2, objectives, 1. dot)

c) FALSE – Principle #1 states that exhaustive testing is impossible, so one can never prove that all defects were identified.

d) FALSE – To make an assessment whether a defect will cause a failure or not, one has to detect the defect first. Saying that no remaining defect will cause a failure, implicitly means that all defects were found. This contradicts Principle #1.

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Question 3	LO-1.4.1	K1

Which of these tasks would you expect to be performed during the Test Analysis and Design phase of the Fundamental Test Process?

Answer Set:

a) Defining test objectives

b) Reviewing the test basis

c) Creating test suites from test procedures

d) Analyzing lessons learned for process improvement

Justification

a) FALSE – this activity is performed during "Test Planning" phase (section 1.4.1, sentence 1)

b) **TRUE** – this activity is performed during "Test Analysis and Design" phase (section 1.4.2, 1. dot))

c) FALSE – this activity is performed during "Test Implementation and Execution" phase (section 1.4.3, 3. dot)

d) FALSE – this activity is performed during "Test Closure Activities" phase (section 1.4.5; 6. dot)

Question 4	LO-1.1.5	K2

Below is a list of problems that can be observed during testing or in production. Which one of these problems is a failure?

Answer Set:

a) The product crashed when the user selected an option in a dialog box.

b) One source code file included in the build has the FALSE version.

c) The computation algorithm used FALSE input variables.

d) The developer misinterpreted the requirement for the algorithm.

Justification

a) **TRUE** – A failure is an external manifestation of a defect. A crash is clearly noticeable by user.

b) FALSE – This type of mistake will not necessarily lead to a visible or noticeable failure. For example: if the changes in the new version of the source file are only in the comments.

c) FALSE – Use of a FALSE input variable will not necessarily lead to a visible or noticeable failure. For example: if no one uses this specific algorithm; or: if the FALSEly used input variable had a similar value as the TRUE input variable; or: if no one is using the FALSE result from the algorithm. "Defects in software, systems or documents may result in failures, but not all defects do so." (Section 1.1.2; 1. Par.; 3. dot)

d) FALSE – This type of mistake will not necessarily lead to a visible or noticeable failure. For example: if no one uses this specific algorithm.

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Question 5	LO-1.5.1	K1

Which of the following attitudes, qualifications or actions would lead to problems (or conflict) within mixed teams of testers and developers, when observed in reviews and tests?

Answer Set:

a) Testers and developers are curious and focused on finding defects.

b) Testers and developers are sufficiently qualified to find failures and defects.

c) Testers and developers communicate defects as criticism of people, not as criticism of the software product.

d) Testers expect that there might be defects in the software product which the developers have not found and fixed.

Justification

a) FALSE. There is no situation which leads to conflict. Testers and developers should be focused on finding defects.

b) FALSE. This is a preferred situation, there is therefore no problem.

c) **TRUE**. According to the syllabus, testers and developers should cooperate, and communicating defects as criticism of people would lead to conflict inside the team. (Section 1.5.9; Par. 9; 2. dot)

d) FALSE. The tester's role in the team is finding defects in the software product that the developers have not found and fixed.

Question 6	LO-1.2.2	K2

Which of the following statements are TRUE?

   I.   Software testing may be required to meet legal or contractual requirements.
   II.   Software testing is mainly needed to improve the quality of the product.
   III.   Rigorous testing and fixing of found defects could help reduce the risk of problems occurring in an operational environment.
   IV.   Rigorous testing is sometimes used to prove that all failures have been found.

Answer Set:

a)   I, II and III are true; IV is false

b)   I is true; II, III, and IV are false

c)   I and III are true; II and IV are false

d)   III and IV are true; I and II are false

Justification

   I.   TRUE. Software testing may be required to meet legal or contractual requirements. (Section 2.2.4)

   II.   TRUE. Software testing is mainly needed to improve the quality of the product. (LO 1.1.4; Section 1.1.3; Par. 1; Section 1.1.4; Section. 2; Section 1.5; last enumeration; dot 1)

   III.   TRUE. One of the main aims of software testing is to reduce the risk of problems occurring in an operational environment. (Section 1.2; objectives 1 and 4)

   IV.   FALSE. It is impossible to prove that all failures have been found. (Section. 1.3; principle 2)

Hence

   a)   **TRUE**, because I, II and III are TRUE.

   b)   FALSE, because II and III are NOT TRUE.

   c)   FALSE, because II is not FALSE.

   d)   FALSE, because IV is not TRUE and because I and II are TRUE.

| Question 7 | LO-1.2.3 | K2 |

Which of the following statements correctly describes the difference between testing and debugging?

Answer Set:

a) Testing identifies the source of defects; debugging analyzes the faults and proposes prevention activities.

b) Dynamic testing shows failures caused by defects; debugging finds, analyzes, and removes the causes of failures in the software.

c) Testing removes faults; debugging identifies the causes of failures.

d) Dynamic testing prevents the causes of failures; debugging removes the failures.

Justification

a) FALSE. Testing does not identify the source of defects (Section 1.2).

b) **TRUE**. Dynamic testing shows failures caused by defects; debugging finds, analyzes, and removes the causes of failures in the software (Section 1.2).

c) FALSE. Testing does not remove faults (Section 1.2).

d) FALSE. Dynamic testing does not prevent the causes of failures (Section 1.3).

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2. Questions "Testing throughout the software life-cycle"

| Question 8 | LO-2.3.3 | K1 |

Which of the following statements BEST describes non-functional testing?

Answer Set:

a) Non-functional testing is the process of testing an integrated system to verify that it meets specified requirements.

b) Non-functional testing is the process of testing to determine system compliance with coding standards.

c) Non-functional testing is testing without reference to the internal structure of a system.

d) Non-functional testing is testing system characteristics, such as usability, reliability, or maintainability.

Justification

a) FALSE, this is a definition of system testing (Section 2.2.3).

b) FALSE, this is a function of tool supported static analysis (Section 3.3 and Section 6.1.4).

c) FALSE, it is a definition of black box testing (Section 4.2).

d) **TRUE**, testing system characteristics, such as usability, reliability, or maintainability is non-functional testing (Section 2.3.2).

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Question 9	LO-2.1.x	K1

When working with software development models, what is it important to do?

Answer Set:

a) If needed, adapt the models to project and product characteristics.

b) Choose the waterfall model, because it is the most proven model.

c) Start with the V-model, and then move to either the iterative or the incremental model.

d) Change the organization to fit the model, not vice versa.

Justification

a) **TRUE** – Models provide general guidelines – not an accurate and step-by-step process that has to be followed to the letter. (Section 2.1)

b) FALSE – The waterfall is only one of the possible models a team can choose to follow.

c) FALSE – The V-model (Section 2.1.1) is not compatible with iterative models. (Section 2.1.2) So the described flow does not make sense.

d) FALSE – Models are chosen to fit the situation and project and not vice versa (Section 2.1, last Par.)

Question 10	LO-2.1.3	K1

Which of the following is a characteristic of good testing and applies to any software development life cycle model?

Answer Set:

a)   Acceptance testing is always the final test level to be applied.

b)   All test levels are planned and completed for each developed feature.

c)   Testers are first involved when first piece of code can be executed.

d)   For every development activity there is a corresponding testing activity.

Justification

a)   FALSE – This is TRUE only for projects that have acceptance tests. Some projects do not have this test level. (see Section 2.1).

b)   FALSE – There are cases where some test levels are not necessarily needed. For example: when getting code from 3rd party, component testing is not needed.

c)   FALSE – Testers should be involved much earlier than when the code is available. For example, testers should be involved in requirements specification reviews. (Section 1.4.2)

d)   **TRUE** – "In any life cycle model, there are several characteristics of good testing: For every development activity there is a corresponding testing activity." (Section 2.1.3)

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Question 11	LO-2.4.1	K1

Which of the following is an example of maintenance testing?

Answer Set:

a) To test corrected defects during development of a new system.

b) To test enhancements to an existing operational system.

c) To handle complaints about system quality during user acceptance testing.

d) To integrate functions during the development of a new system.

Justification

a) FALSE – Testing a new system is not "maintenance testing" (Section 2.4).

b) TRUE – testing the system's ability to perform after an environment change is considered "maintenance testing". (Section 2.4).

c) FALSE – Dealing with Acceptance Test failures is not "maintenance testing" (cf. Section 2.4).

d) FALSE – Integration of functions is not a testing activity (cf. Section 2.2.2).

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Question 12	LO-2.3.5	K2

Which of the following statements are TRUE?

    I.   Regression testing and confirmation testing are the same.
    II.   Regression testing shows that all defects have been resolved.
    III.   Regression testing is a good candidate for test automation.
    IV.   Regression testing is performed to uncover defects as a result of changes in the software.
    V.   Regression testing should not be performed during integration testing.

Answer Set:

a)   IV is true; I, II, III and V are false

b)   III is true; I, II, IV and V are false

c)   III and IV are true; I, II und V are false

d)   I, III and IV are true; II and V are false

Justification

Statement I is FALSE – **Regression testing** is the repeated testing of an already tested program, after modification, to discover any defects introduced or uncovered as a result of the change(s). **Confirmation testing** is done to confirm that a defect has been successfully removed. (Section 2.3.4).

Statement II is FALSE – The sentence describes confirmation testing. (Section 2.3.4)

Statement III is TRUE - Regression test suites are run many times and generally evolve slowly, so regression testing is a strong candidate for automation. (Section 2.3.4)

Statement IV is TRUE – This is the definition of regression testing (See Section 2.3.4).

Statement V is FALSE – "Regression testing may be performed at all test levels, and includes functional, non-functional and structural testing." (Section 2.3.4)

Hence

    a)   WRONG, because I and II are FALSE.

    b)   WRONG, because I and V are FALSE.

    c)   **CORRECT**, because III and IV are TRUE.

    d)   WRONG, because II and V are FALSE.

Question 13	LO-2.2.1	K2

Which of the following statements comparing component testing and system testing is TRUE?

Answer Set:

a) Component testing verifies the functionality of software modules, program objects, and classes that are separately testable, whereas system testing verifies interfaces between components and interactions between different parts of the system.

b) Test cases for component testing are usually derived from component specifications, design specifications, or data models, whereas test cases for system testing are usually derived from requirement specifications, functional specifications, or use cases.

c) Component testing only focuses on functional characteristics, whereas system testing focuses on functional and non-functional characteristics.

d) Component testing is the responsibility of the testers, whereas system testing typically is the responsibility of the users of the system.

Justification

a) FALSE. System testing does not test interfaces between components and interactions between different parts of the system; it is a target of integration tests. (cf. Section 2.2.2)

b) **TRUE**. Section 2.2.1 (Component testing), test base, 1. Dot; Section 2.2.3 (System testing) test base, 1. - 3. dot.

c) FALSE, Component testing does not ONLY focus on functional characteristics (cf. Section 2.2.1, Par.2; after "typical test objects").

d) FALSE, Component testing typically is the responsibility of the developers, whereas system testing typically is the responsibility of testers (cf. Section 2.2.3, 4. Par. after "typical test objects", sentence 2).

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3. Questions "Static techniques"

Question 14	LO-3.2.1	K1

Which of the following describes the main phases of a formal review?

Answer Set:

a) Initiation, backtracking, individual preparation, review meeting, rework, follow-up

b) Planning, individual preparation, review meeting, rework, closure, follow-up

c) Planning, kick off, individual preparation, review meeting, rework, follow-up

d) Individual preparation, review meeting, rework, closure, follow-up, root cause analysis

Justification

The main phases of a formal review are planning, kick off, individual preparation, review meeting, rework, follow up, hence

a) FALSE: Planning and kick-off missing(cf. Section 3.2.1), Initialization and backtracking (cf. Section 3.2.1) are not included in the process;

b) FALSE: Kick-off missing (cf. Section 3.2.1); closure is NOT part of the review process;

c) **TRUE:** (cf. Section 3.2.1);

d) FALSE: Planning and kick off missing (cf. Section 3.2.1); closure, root cause analysis are not part of the review process;

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Question 15	LO-3.2.2	K2

Which of the review types below is the BEST option to choose for reviewing safety critical components in a software project if additionally the review must be demonstrated as a formal process based on rules and checklists?

Answer Set:

a) Informal Review
b) Technical Review
c) Inspection
d) Walkthrough

Justification

For reviewing safety critical components in an software project a more formal, documented review, based on rules and checklists is needed, therefore an inspection.

hence

      a) FALSE

      b) FALSE

      c) TRUE

      d) FALSE

Question 16	LO-3.3.2	K1

Which of the following statements about tool-supported static analysis is FALSE?

Answer Set:

a) Tool-supported static analysis can be used as a preventive measure with appropriate processes in place.

b) Tool-supported static analysis can find defects that are not easily found by dynamic testing.

c) Tool-supported static analysis can result in cost savings by finding defects early.

d) Tool-supported static analysis is a good way to force failures into the software.

Justification

a) FALSE. This statement is true, tool-supported static analysis can be used as a preventive measure (Section 3.3, advantages 2. and 6. dot)

b) FALSE. This statement is true, tool-supported static analysis can find defects that are not found by dynamic testing (Section 3.3, background, 1. Par., sentence 3).

c) FALSE. This statement is true, tool-supported static analysis is a cost saving method used to find defects early (Section 3.3, advantages, 1. Dot)

d) **TRUE**. This statement is wrong. During static analysis no failures are found, because the code is not running (Section 3.2, background, sentence 2).

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4. Questions "Test design techniques"
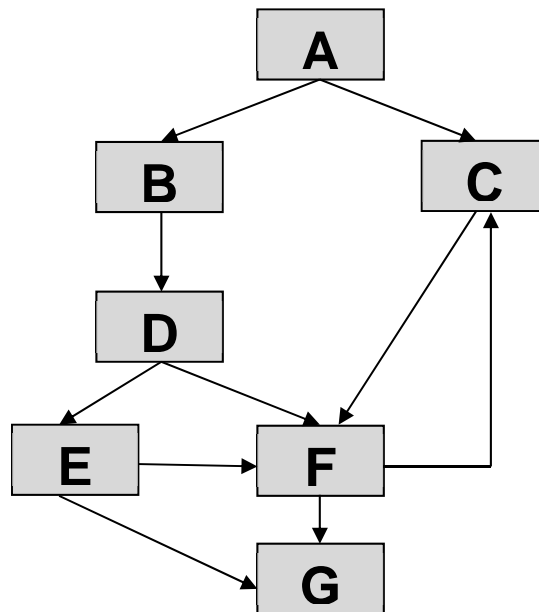
Question 17	LO-4.4.4	K4

One of the test goals for your project is to have 100% decision coverage. The following three tests have been executed for the control flow graph shown below.

Test_01 covers path: A, B, D, E, G
Test_02 covers path: A, B, D, E, F, G
Test_03 covers path: A, C, F, C, F, C, F, G

Which of the following statements related to the decision coverage goal is TRUE?

Answer Set:

   a)   Decision D has not been tested completely.

   b)   100% decision coverage has been achieved.

   c)   Decision E has not been tested completely.

   d)   Decision F has not been tested completely.

Justification

In the diagram there are following four conditions/decisions: A, D, E. F

The Test_01 covers A->B, D->E and E->G

The Test_02 covers A->B, D->E, E->F and F->G

The Test_03 covers A->C, F->C and F->G.

Hence

condition A is covered (A->B by Test_01 and A->C by Test_03),

condition E is covered (E->G by Test_01 and E->F by Test_02),

condition F is covered (F->C by Test_03 and F->G by Test_02 and Test_03).

Condition D is not covered, there is only D->E by Test_01 and Test_02, but D->F is not covered.

Hence

      a) **TRUE**: D was not covered (see above)

      b) FALSE: 1 of 4 decisions was not covered (see above), so there are only 75% decision coverage.

      c) FALSE: E has been fully tested/covered (see above).

      d) FALSE: F has been fully tested/covered (see above).

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Question 18	LO-4.2.2	K2

A defect was found during testing:

While receiving customer data from a server the system crashed. The defect was fixed by correcting the code that checked the network availability during data transfer. The existing test cases covered 100% of all statements of the corresponding module. To verify the fix and to ensure more extensive coverage, some new tests were designed and added to the test suite and executed.

Which of the following test types should be used in this scenario?

- I. Functional testing
- II. Structural testing
- III. Re-testing
- IV. Performance testing

Answer Set:

a) I and II are used, but not III and IV

b) I and III are used, but not II and IV

c) I, II and III are used, but not IV

d) II, III and IV are used, but not I

Justification

I. TRUE:. Receiving customer data is typical functional testing

II. TRUE: In the problem description it was stated, "*The existing test cases covered 100% of all statements of the corresponding module*"; statement testing is structural testing

III. TRUE:. In the problem description it was stated, "*To verify the fix and to ensure more extensive coverage, some new tests were designed and added to the test suite and executed*", so this is a retest.

IV. FALSE. In the problem description there is no information about performance testing.

Hence

a) FALSE, as III is missing.

b) FALSE, as II is missing.

c) **TRUE**, as I,,II and III are mentioned.

d) FALSE, since I is absent and IV is mentioned erroneously.

Question 19	LO-4.3.1	K3

Which of the following statements about the given state transition diagram and table of test cases is TRUE?
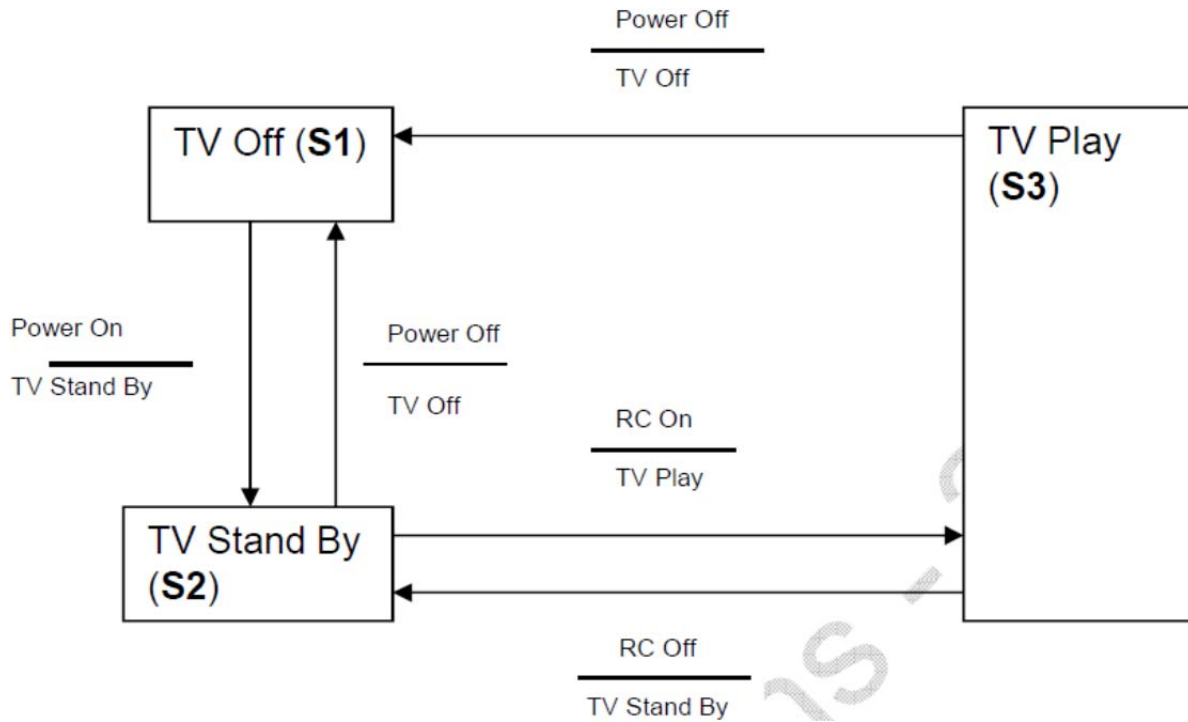
Test Case	1	2	3	4	5
Start State	S1	S2	S2	S3	S3
Input	Power On	Power Off	RC On	RC Off	Power Off
Expected Output	TV Stand By	TV Off	TV Play	TV Stand By	TV Off
Final State	S2	S1	S3	S2	S1

Answer Set:

a) The given test cases can be used to derive both valid and invalid transitions in the state transition diagram.

b) The given test cases represent all possible valid transitions in the state transition diagram.

c) The given test cases represent only some of the valid transitions in the state transition diagram.

d) The given test cases represent sequential pairs of transitions in the state transition diagram.

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Justification

Proposed test cased covered all five possible single valid transitions in the given state diagram
(S1->S2, S2->S1, S2->S3, S3->S2, S3->S1).

Hence

a) Is FALSE, because no invalid transitions are covered.

b) Is **TRUE**, because all valid transitions are covered.

c) Is FALSE, because all valid transitions are covered.

d) Is FALSE, because the test cases do not contain pairs of transitions.

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Question 20	LO-4.3.2	K2

Which of the following statements for the equivalence partitioning test technique are TRUE?

Equivalence partition testing …

I. divides possible inputs into classes where all elements are expected to cause the same behavior.
II. uses both valid and invalid partitions.
III. must include at least two values from every equivalence partition.
IV. can be used only for testing equivalence partition inputs from a Graphical User Interface.

Answer Set:

a) I, II and IV are TRUE; III is FALSE

b) I is TRUE; II, III and IV are FALSE

c) II and III are TRUE; I and IV are FALSE

d) I and II are TRUE; III and IV are FALSE

Justification

I. Is TRUE, because equivalence partitions divide possible inputs into classes where all elements are expected to cause the same behavior (Section 4.3.1, 1. sentence);

II. Is TRUE, because Equivalence partitions uses both valid and invalid partitions. (Section 4.3.1, 2. sentence);

III. Is FALSE, it is enough to use one value from each class. (Section 4.3.1, 1. Par.);

IV. Is FALSE, input from GUI is possible, but this method is not nessecary.

Hence

a) FALSE, because IV is NOT TRUE.
b) FALSE, because II is NOT FALSE.
c) FALSE, because III is NOT TRUE and I isNOT FALSE;
d) TRUE, because I and II are TRUE and III and IV are FALSE.

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Question 21	LO-4.2.2	K1

Which of the following options lists techniques categorized as Black Box design techniques?

Answer Set:

a) Equivalence Partitioning, Decision Table testing, State Transition testing, and Boundary Value analysis

b) Equivalence Partitioning, Decision Table testing, Statement coverage, Use Case Based testing

c) Equivalence Partitioning, Decision Coverage testing, Use Case Based testing

d) Equivalence Partitioning, Decision Coverage testing, Boundary Value analysis

Justification

a) **TRUE** – all four are black box tests techniques. (See section 4.3)

b) FALSE – Statement Coverage is a white box test technique (Section 4.4.1)

c) FALSE – Decision Coverage is a white box test technique (Section 4.4.2)

d) FALSE – Decision Coverage is a white box test technique (Section 4.4.2)

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Question 22	LO-4.3.1	K3

An employee's bonus is to be calculated. It cannot be negative, but it can be calculated down to zero. The bonus is based on the length of employment.

The categories are: less than or equal to 2 years, more than 2 years but less than 5 years, 5 or more years, but less than 10 years, 10 years or longer. Depending on the length of employment, an employee will get different levels of bonus.

How many test cases are necessary, if only valid equivalence partitions are needed to test the calculation of the bonus?

Answer Set:

a) 3

b) 5

c) 2

d) 4

Justification

a) FALSE – see the TRUE partitions in d)

b) FALSE – see the TRUE partitions in d)

c) FALSE – see the TRUE partitions in d)

d) **TRUE**. The partitions follow the description in the question:

1. equivalence partition: $0 <$ employment time ≤ 2
2. equivalence partition: $2 <$ employment time < 5
3. equivalence partition: $5 \le$ employment time < 10
4. equivalence partition: $10 \le$ employment time

Question 23	LO-4.3.5	K3

Which of the following statements about the benefits of deriving test cases from use cases are true and which are false?

I.   Deriving test cases from use cases is helpful for system and acceptance testing.
II. Deriving test cases from use cases is helpful only for automated testing.
III. Deriving test cases from use cases is helpful for component testing.
IV. Deriving test cases from use cases is helpful for integration testing.

Answer Set:

a)   I and IV are true; II and III are false

b)   I is true; II, III, and IV are false

c)   II and IV are true; I and III are false

d)   I, III and IV are true; II is false

Justification

Statement I is **TRUE** – Use cases describe how users interact with the completed system, therefore are best fitted for defining system-level tests. Additionally, "Use cases are very useful for designing acceptance tests with customer/user participation." (Section 4.3.5)

Statement II is FALSE – Use cases can be executed manually, not just automatically.

Statement III is FALSE – at the component level we derive test cases to increase code coverage. These are derived mostly by looking at the code, not by definition of a use case which will eventually exercise a certain piece of the code. (Section 2.2.1)

Statement IV is TRUE – "[use cases] also help uncover integration defects caused by the interaction and interference of different components" (Section 4.3.5)

Hence

a)   **TRUE,** because I AND IV are TRUE;

b)   FALSE, because IV is TRUE (and NOT FALSE);

c)   FALSE, because II is FALSE (and NOT TRUE) and I TRUE (and is NOT FALSE)

d)   FALSE, because III is FALSE (and NOT TRUE)

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Question 24	LO-4.5.1	K2

Which of the options below would be the BEST basis for testing using fault attacks?

Answer Set:

a) Experience, defect and failure data; knowledge about software failures

b) Risk identification performed at the beginning of the project

c) Use Cases derived from business flows by domain experts

d) Expected results from comparison with an existing system

Justification

a) **TRUE** – "These defect and failure lists can be built based on experience, available defect and failure data, and from common knowledge about why software fails." (Section 4.5, Par. 2, last sentence)

b) FALSE – Risk identification tags the areas or features of concern in the project – not how to test them.

c) FALSE – Testing business flows is not targeted at known weaknesses in software. It just attempts to verify certain use cases can be executed. (Section 4.5, Par. 2, last sentence).

d) FALSE – The sentence describes one of the possible ways to know if a test failed or not and has nothing specific to do with fault-attacks. (Section 4.5 2, Par. 2, last sentence).

Question 25	LO-4.5.1	K1

You are working on a project that has poor specifications and time pressure.

Which of the following test techniques would be the most useful approach to use?

Answer Set:

a) Use Case Testing

b) Statement Testing

c) Exploratory Testing

d) Decision Testing

Justification

a) FALSE, the project has poor specifications, hence there is only a small possibility that any use cases exist.

b) FALSE, statement testing is time consuming, and there is time pressure in the project.

c) **TRUE**, exploratory testing is a good idea when there is poor documentation and time pressure (Section 4.5, background, Par.3, Sentence 3).

d) FALSE, decision testing is time consuming, and there is time pressure in the project.

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Question 26	LO-4.2.2	K1

Which of the following test techniques is a white-box technique?

Answer Set:

a) Decision Testing

b) Boundary Value Analysis

c) Equivalence Partitioning

d) State Transition Testing

Justification

a) **TRUE**, decision testing is a white box technique (Section 4.4.2).

b) FALSE, Boundary Value Analysis is a black-box technique (Section 4.3.2).

c) FALSE, Equivalence partitioning is a black-box technique (Section 4.3.1).

d) FALSE, State Transition testing is a black-box technique (Section 4.3.4).

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Question 27	LO-4.3.1	K3

You are testing a system that calculates the greatest common divisor (GCD) of two integers (A and B) greater than zero. [K3]

calcGCD (A, B);

The following test inputs have been specified.

Test Case	A	B
1	1	1
2	INT_MAX	INT_MAX
3	1	0
4	0	1
5	INT_MAX+1	1
6	1	INT_MAX+1

where INT_MAX is the largest Integer.

Which specification-based test technique would you use for test cases 1 through 6?

Answer Set:

a) Boundary Value Analysis

b) State Transition Testing

c) Use Case Testing

d) Decision Table Testing

Justification

a) **TRUE**: given values (0,1,INT_MAX+1, INT_MAX) are typical border values

b) FALSE, see a) for justification

c) FALSE, see a) for justification

d) FALSE, see a) for justification

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Question 28	LO-4.3.1	K3

A company's employees are paid bonuses if they work more than a year in the company and achieve individually agreed targets.

The following decision table has been designed to test the system:

		T1	**T2**	**T3**	**T4**	**T5**	**T6**	**T7**	**T8**
Conditions									
Cond1	Employment for more than 1 year?	YES	NO	YES	NO	YES	NO	YES	NO
Cond2	Agreed target?	NO	NO	YES	YES	NO	NO	YES	YES
Cond3	Achieved target?	NO	NO	NO	NO	YES	YES	YES	YES
Action									
	Bonus payment?	NO	NO	NO	NO	NO	NO	YES	NO

Which test cases could be eliminated in the above decision table because the test case wouldn't occur in a real situation?

Answer Set:

a) T1 and T2

b) T3 and T4

c) T7 and T8

d) T5 and T6

Justification

In the test cases one should infer from the conditions. In the test cases T5 and T6 the situation is described, where the target is reached, however, was not agreed. Since this situation can´t occur, therefore we can eliminate the corresponding test cases.

Hence

a) FALSE

b) FALSE

c) FALSE

d) TRUE

5. Questions "Test management"

| Question 29 | LO-5.1.4 | K1 |

Which of the following BEST describes how tasks are divided between the test manager and the tester?

Answer Set:

a) The test manager plans testing activities and chooses the standards to be followed, while the tester chooses the tools and controls to be used.

b) The test manager plans, organizes, and controls the testing activities, while the tester specifies and executes tests.

c) The test manager plans, monitors, and controls the testing activities, while the tester designs tests and decides about the approval of the test object.

d) The test manager plans and organizes the testing, and specifies the test cases, while the tester prioritizes and executes the tests.

Justification

a) FALSE – Selecting tools is a test manager's task (Section 5.1.2).

b) **TRUE** – see section 5.1.2.

c) FALSE – Deciding about approval of the test object is a test manager's task (see Section 5.1.2).

d) FALSE – Test manager does not specify the test cases (Section 5.1.2).

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Question 30	LO-5.5.3	K1

Which of the following can be categorized as a product risk?

Answer Set:

a) Low quality of requirements, design, code and tests.

b) Political problems, and delays in especially complex areas in the product.

c) Error-prone areas, potential harm to the user, poor product characteristics.

d) Problems in defining the right requirements, potential failure areas in the software or system.

Justification

a) FALSE – Low quality requirements are a project risk (Section 5.5.1).

b) FALSE – All the items in this option are project risks (Section 5.5.1).

c) **TRUE** – all items are product risks (Section 5.5.2).

d) FALSE – Requirements problems are project risk. (Section 5.5.1).

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| Question 31 | LO-5.2.9 | K2 |

Which of the following are typical exit criteria from testing?

Answer Set:

a) Test coverage measures, reliability measures, test cost, schedule, status of defect correction and residual risks

b) Test coverage measures, reliability measures, degree of tester independence, and product completeness

c) Test coverage measures, reliability measures, test cost, availability of testable code, time to market, and product completeness

d) Time to market, residual defects, tester qualification, degree of tester independence, test coverage measures and test cost

Justification

a) **TRUE** – See section 5.2.4 (all 5 dots).

b) FALSE – Degree of tester's independence does not play a role in exit criteria (cf. Section 5.2.4).

c) FALSE – "availability of testable code" is an entry criteria (Section 5.2.3).

d) FALSE – Degree of tester's independence as well as tester qualification do not play a role in exit criteria (cf. Section 5.2.4).

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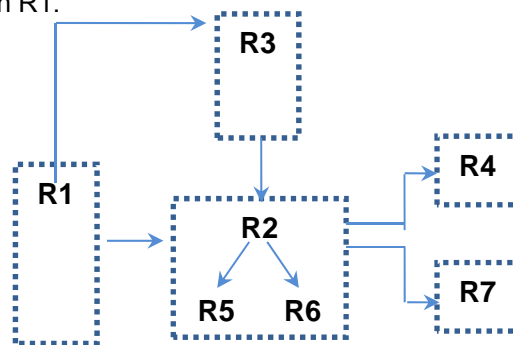ISTQB

| Question 32 | LO-5.2.5 | K3 |

As a Test Manager, you have the following requirements to test:

        R1 – Process Anomalies
        R2 – Synchronization
        R3 – Confirmation
        R4 – Issues
        R5 – Financial Data
        R6 – Diagram Data
        R7 – Changes to the User Profile

The notation to indicate any Requirement's logical dependencies is, for example, "R1 -> R3" meaning that R3 is dependent on R1.

Which of the following options structures the test execution schedule according to the requirement dependencies?

Answer Set:

a)   R3 --> R2 --> R1 --> R7 --> R5- -> R6 --> R4

b)   R2 - -> R5 --> R6 --> R4 --> R7 --> R1 --> R3

c)   R1 --> R3 --> R2 --> R5 --> R6 --> R4 --> R7

d)   R1 --> R2 --> R5- -> R6 --> R3 --> R4 --> R7

Justification

a) FALSE – everything is dependent on R1, so any test flow that does not start with R1 is FALSE.

b) FALSE – everything is dependent on R1, so any test flow that does not start with R1 is FALSE.

c) **TRUE** – the tests are specified in a cadence that takes the dependencies into account.

d) FALSE – R2 is dependent on R3, so R3 should be tested before R2.

Question 33	LO-5.1.1	K1

Which of the following is a possible benefit of independent testing?

Answer Set:

a) More work gets done because testers do not disturb the developers all the time.
b) Independent testers tend to be unbiased and find different defects than the developers.
c) Independent testers do not need extra education and training.
d) Independent testers reduce the bottleneck in the incident management process.

Justification:

a) FALSE – independence does not mean loss of cooperation.

b) **TRUE** – that is one of the reasons for independence (Section 5.1.1).

c) FALSE – testers need education and training.

d) FALSE – there is no connection between Independent testers and the bottleneck in the incident management process.

Question 34	LO-5.5.4	K1

Which of the following is a project risk?

Answer Set:

a) Skill and staff shortages

b) Poor software characteristics (e.g. usability)

c) Failure-prone software delivered

d) Possible reliability defect (bug)

Justification

a. **TRUE** - skill and staff shortages is typical project risk (Section 5.5.1).

b. FALSE - it is a product risk (Section 5.5.2).

c. FALSE- it is a product risk (Section 5.5.2).

d. FALSE - it is a product risk (Section 5.5.2).

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Question 35	LO-5.3.3	K2

As a test manager, you are asked for a test summary report. Concerning test activities, and according to the IEEE 829 Standard, what should be the MOST important information to include in your report?

Answer Set:

a) The number of test cases executed and their results.

b) An overview of the major testing activities, events and the status with respect to meeting goals

c) Overall evaluation of each development work item

d) Training taken by members of the test team to support the test effort

Justification

a) FALSE - the number of test cases executed and their results may be included in a test summary report according to IEEE 829, but not as the most important part.

b) **TRUE** – the test summary report must include information about the major testing activities, events and the status with respect to meeting goals (cf. also Syllabus, Section 5.3.2).

c) FALSE - evaluation of each development work item is not the part of test summary report.

d) FALSE –training is not relevant in a test summary report.

Question 36	LO-5.6.2	K3

You are a tester in a safety-critical software development project. During execution of a test, you find out that one of your test cases failed, causing you to write an incident report.

According to the IEEE Std. 829, what should you consider to be the MOST important information to include in your incident report in the context of a safety-critical development?

Answer Set:

a) Impact, incident description, date and your name

b) Unique ID for the report, special requirements needed and the person who caused the defect

c) Transmitted items, your name and your feelings about the possible root cause of the defect

d) Incident description, development environment and expected results of testing

Justification

a) **TRUE** – the most important information that should be included in an incident report for critical software is impact

b) FALSE – this information should be in an incident report but this information isn't as important as impact; see a).

c) FALSE – see a), an incident report should contain factual information, not the tester's 'feeling' about the possible root cause

d) FALSE – this information should be in an incident report but this information isn't as important as impact; see a).

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6. Questions "Test tools"

Question 37	LO-6.3.1	K1

From the list below, which are the recommended principles for introducing a test tool to an organization?

1. Roll out the tool to the entire organization at the same time
2. Start with a pilot project
3. Adapt and improve processes to fit the use of the tool
4. Provide training and coaching for new users
5. Let each team decide their own way of using the tool
6. Monitor that costs do not exceed initial acquisition cost
7. Gather lessons learned from all teams

Select ONE option.

Answer Set:

a)   1, 3, 4, 5

b)   2, 5, 6

c)   2, 3, 4, 7

d)   1, 6, 7

Justification

Statement 1 is **NOT TRUE** – It is recommended to first do a pilot deployment, before rolling out to the entire organization (Section 6.3).

Statement 2 is **TRUE** – See above.

Statement 3 is **TRUE** – "Evaluate how the tool fits with existing processes and practices, and determine what would need to change" (Section 6.3).

Statement 4 is **TRUE** – Provision of training is one of the success factors for deployment (Section 6.3).

Statement 5 is **NOT TRUE** – If you let everyone to decide how to use the tool, there will be a mess. "Defining usage guidelines" is one of the success factors for deployment (Section 6.3).

Statement 6 is **NOT TRUE** - The cost of deploying a tool is more than just the acquisition cost of the tool. Failing to realize this is one of the risks associated with tool deployment (Section 6.2).

Statement 7 is **TRUE** - "Gathering lessons learned from all teams" is one of the success factors for deployment (Section 6.3).

Hence

a) FALSE

b) FALSE

c) TRUE

d) FALSE

Question 38	LO-6.2.2	K1

Which of the following BEST describes a characteristic of a keyword-driven test execution tool?

Answer Set:

a) A table with test input data, action words, and expected results controls execution of the system under test.

b) Tester actions are automated using a script that is rerun several times.

c) Tester actions are automated using a script that is run with several sets of test input data.

d) The ability to log test results, and compare them against the expected results stored in a text file.

Justification

a) **TRUE** – "In a keyword-driven testing approach, the spreadsheet contains keywords describing the actions to be taken (also called action words), and test data" (Section 6.2.2)

b) FALSE – this is a description of scripted test automation (Section 6.2.2)

c) FALSE – this is a description of data-driven test automation (Section 6.2.2)

d) FALSE – this is describing a part of what a test automation framework does (Section 6.1.6)

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| Question 39 | LO-6.3.2 | K1 |

Which of the following is NOT a goal of a pilot project for tool evaluation?

Answer Set:

a) To evaluate how the tool fits with existing processes and practices.

b) To determine use, management, storage, and maintenance of the tool and testware.

c) To assess whether the benefits will be achieved at reasonable cost.

d) To reduce the defect rate in the pilot project.

Justification

a) FALSE – the statement is true, (section 6.3)

b) FALSE – the statement is true, (section 6.3)

c) FALSE -- the statement is true, (section 6.3)

d) **TRUE** – reducing the number of defects is not the goal of a pilot project (see section 6.3)

Question 40	LO-6.1.3	K2

A software development and test organization would like to achieve the test efficiency improvement goals listed below.

Which would best be supported by a test management tool?

Answer Set:

a) Enable traceability between requirements, tests, and defects (bugs)

b) Optimize the ability of tests to identify failures

c) Resolve defects faster

d) Automate a selection of test cases for execution

Justification

a) **TRUE** – because traceability between requirements and testing is a functionality of a test management tool (section 6.1.3)

b) FALSE – because this is not possible with test management tools (section 6.1.6)

c) FALSE -- because this is not mainly solved by test management tools (section 6.1.3)

d) FALSE – because the selection of test cases is not supported by test management tools (section 6.1.6)