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ISTQB® Certified Tester Advanced Level - Test Manager [Syllabus 2012]

iSQI CTAL-TM_Syll2012

Version Demo

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QUESTION NO: 1

Reviews

You are the Test Manager of a project that adopts a V-model with four formal levels of testing: unit, integration, system and acceptance testing.

On this project reviews have been conducted for each development phase prior to testing, which is to say that reviews of requirements, functional specification, high-level design, low-level design and code have been performed prior to testing.

Assume that no requirements defects have been reported after the release of the product.

Which TWO of the following metrics do you need in order to evaluate the requirements reviews in terms of phase containment effectiveness?

Number of correct responses: 2

K3 2 credits

A. Number of defects found during the requirements review

B. Total number of defects attributable to requirements found during unit, integration, system and acceptance testing

C. Total number of defects found during functional specification review, high-level design review, low-level design review, code review, unit testing, integration testing, system testing and acceptance testing

D. Time to conduct the requirements review

E. Total number of defects attributable to requirements, found during functional specification review, high-level design review, low-level design review, code review, unit testing, integration testing, system testing and acceptance testing

ANSWER: A E

Explanation:

Phase containment effectiveness evaluates how successfully a defect-removal activity detects defects within the phase in which they were introduced, rather than allowing them to escape to subsequent lifecycle phases. For requirements reviews, the numerator is therefore the number of requirements defects detected during the requirements review. This measures the requirements-originated defects that were contained at the requirements phase.

The corresponding denominator must be the complete population of requirements-attributable defects discovered from that review onward: those found during the requirements review plus requirements defects that escaped and were discovered during later reviews and all test levels. Because the scenario explicitly states that no requirements defects were reported after release, the stated later review and testing activities account for the remaining relevant defect population. Using these two measures allows the Test Manager to calculate the proportion of requirements defects removed by the requirements review before they propagated downstream. This is a phase-containment measure, not an effort or duration measure. The Advanced Level Test Management syllabus identifies review effectiveness and defect detection/removal measures as relevant test-process metrics; see the ISTQB Test Manager certification page and the ISTQB glossary search for phase containment.

QUESTION NO: 2

Test Management

A project is developing a mobile application that allows customers to view and change personal information. The following product quality risks have been assessed as high:

QR-SEC-1. A user might access another customer’s personal information.

QR-COMP-1. The application might expose personal data in device logs or diagnostic messages.

QR-REL-1. A network interruption during an update might leave customer data in an inconsistent state.

Which THREE of the following test activities would be appropriate for mitigating these risks during system testing?

Number of correct responses: 3

K4 3 credits

A. Attempt to access customer records using authenticated accounts belonging to different customers

B. Inspect device logs and diagnostic messages while exercising functions that handle personal data

C. Interrupt network connectivity during an update and verify the consistency of customer data after recovery

D. Check that all application screens use the approved fonts and corporate colors

E. Repeat successful updates under stable network conditions without simulating interruptions

ANSWER: A B C

Explanation:

Testing access to resources using authenticated accounts belonging to different customers directly addresses the authorization risk. Inspecting device logs and diagnostic output while exercising personal-data functions addresses the risk of unintended information disclosure. Interrupting network connectivity at relevant points during an update and verifying data consistency after recovery addresses the reliability and data-integrity risk.

Testing only the visual appearance of screens does not provide meaningful evidence about authorization, privacy leakage or recovery from interrupted updates. Likewise, executing the same successful update repeatedly under stable network conditions provides limited evidence about the stated network-interruption risk. The scope and intensity of testing should be selected to reduce the identified product quality risks. See the ISTQB glossary entry for risk-based testing.

QUESTION NO: 3

Reviews

You are the Test Manager of a project that adopts a V-model with four formal levels of testing: unit, integration, system and acceptance testing.

On this project reviews have been conducted for each development phase prior to testing, which is to say that reviews of requirements, functional specification, high-level design, low-level design and code have been performed prior to testing.

Assume that no requirements defects have been reported after the release of the product.

Which TWO of the following metrics do you need in order to evaluate the requirements reviews in terms of phase containment effectiveness?

Number of correct responses: 2

K32 credits

A. Number of defects found during the requirements review

B. Total number of defects attributable to requirements found during unit, integration, system and acceptance testing

C. Total number of defects found during functional specification review, high-level design review, low-level design review, code review, unit testing, integration testing, system testing and acceptance testing

D. Time to conduct the requirements review

E. Total number of defects attributable to requirements, found during functional specification review, high-level design review, low-level design review, code review, unit testing, integration testing, system testing and acceptance testing

ANSWER: A E

Explanation:

Phase containment effectiveness measures how successfully a lifecycle phase removes defects that were introduced in, or are attributable to, that phase before those defects escape to later phases. For requirements reviews, the required numerator is the *Number of defects found during the requirements review*. This records the requirements-originated defects contained by the requirements-review activity itself.

The complementary downstream figure is the *Total number of defects attributable to requirements, found during functional specification review, high-level design review, low-level design review, code review, unit testing, integration testing, system testing and acceptance testing*. It captures requirements defects that escaped the requirements review and were detected later. Since the scenario states that no requirements defects were reported after release, these later review and testing activities provide the complete downstream escape population for the product lifecycle described.

Using these two figures, the Test Manager can calculate containment as requirements defects detected during the requirements review divided by all requirements-attributable defects detected during that review or subsequently. This aligns with the Advanced Level Test Management emphasis on using defect data to assess process effectiveness and defect-removal capability. See the ISTQB Advanced Level Test Management certification page and the ISTQB glossary entry for defect detection percentage.

QUESTION NO: 4

Test Management

A project has released a software product to production. The following costs have been recorded after the release:

I. Effort spent by the service desk analysing customer-reported failures

II. Effort spent correcting a defect discovered during system testing before release

III. Compensation paid to customers because a production failure prevented them from completing transactions

IV. Effort spent executing a formal requirements review before implementation

Which TWO of the listed costs are external failure costs?

Number of correct responses: 2

K3 2 credits

A. I. Effort spent by the service desk analysing customer-reported failures

B. II. Effort spent correcting a defect discovered during system testing before release

C. III. Compensation paid to customers because a production failure prevented them from completing transactions

D. IV. Effort spent executing a formal requirements review before implementation

ANSWER: A C

Explanation:

I and III are external failure costs. External failure costs arise when defects cause failures after the product has been delivered or released into operational use. Service-desk investigation of customer-reported failures is incurred because a failure has escaped to production. Customer compensation is also an external failure cost because it is a consequence of the operational failure experienced by users.

Correcting a defect found during system testing before release is an internal failure cost because the defect is detected before delivery. Executing a formal requirements review is a prevention cost because it is intended to avoid defects or identify issues early in a lifecycle work product. Distinguishing these quality-cost categories helps management evaluate the economic value of preventive and detection activities and understand the consequences of defects escaping into operation. See the ISTQB Glossary search for external failure cost.

QUESTION NO: 5

Which classification information would be most useful to capture for newly identified defects? [2]

A. The priority that the business assigned to the project that the defect was found in

B. The system build that the defect was found in

C. The name of the configuration manager who built the system

D. The number of test steps in the test script that found the defect

ANSWER: B

Explanation:

The system build that the defect was found in is the most useful classification information because it identifies the exact integrated version of the product in which the failure was observed. A defect report must enable the issue to be reproduced, investigated, corrected, and subsequently verified. Recording the build provides essential configuration-identification information: developers can retrieve the relevant source, dependencies, and deployed components, while testers can rerun the reported test against the same baseline. It also supports accurate defect tracking across later builds, because the team can determine whether the defect was present in a particular version, whether a correction has been included, and whether the issue is resolved when retested. This aligns with the Test Manager syllabus's treatment of defect reports as controlled information used to manage the defect lifecycle and with configuration-management practices that identify the specific versions of test items and environments involved. The ISTQB glossary defines configuration management as the discipline that establishes and maintains the integrity of a product and its components throughout its life cycle. Capturing the build therefore creates the traceability needed to turn an observed failure into an actionable, verifiable defect record. See the ISTQB Glossary and the ISTQB Test Management certification materials.

QUESTION NO: 6

Improving the Testing Process

Your organization has completed an assessment of its test process. The assessment shows that test environments are frequently unavailable, test data is created inconsistently by individual testers, and test progress reports use different measures on different projects.

Which THREE of the following improvement actions would be appropriate responses to these findings?

Number of correct responses: 3

K4 3 credits

A. Define an environment-management process with clear ownership, configuration control and availability planning

B. Establish a controlled approach for creating, protecting, maintaining and reusing test data

C. Agree a common set of test metrics and reporting rules for projects using the process

D. Replace all testers who currently create their own test data

E. Require immediate achievement of the highest maturity level in a test improvement model

ANSWER: A B C

Explanation:

Defining an environment-management process, establishing a controlled approach for creating and maintaining test data, and agreeing a common set of test metrics and reporting rules are appropriate improvement actions. Each action directly addresses a demonstrated weakness and can be planned, implemented, measured, and reviewed for effectiveness.

Environment management can establish ownership, availability planning, configuration control, access procedures, and escalation paths. A controlled test-data approach improves repeatability, data quality, privacy handling, and reuse. Common metrics and reporting rules make progress information comparable across projects and provide management with a consistent basis for control and improvement. Replacing all testers or adopting the highest possible maturity level

immediately is not a focused response to the identified findings. Test process improvement should be prioritized according to organizational objectives, risks, feasibility, and expected benefit. See the TMMi model overview.

QUESTION NO: 7

Which testing metric identifies defect density? [1]

A. Project

B. Product

C. Process

D. People

ANSWER: B

Explanation:

Product is correct because defect density is a product-quality metric. It expresses the number of confirmed defects associated with a software product relative to a defined measure of that product's size, such as function points, lines of code, requirements, classes, or another agreed unit. Normalizing the defect count by size makes it possible to assess and compare the defect concentration of components or releases of differing sizes. This information supports the Test Manager in evaluating the product's quality status, identifying components that may need additional analysis or testing, and contributing objective evidence to test reporting and release decisions. In the ISTQB terminology, defect density is explicitly defined as the number of defects per unit size of a work product. Since it describes an attribute of the delivered or tested software work product—not the management of the project, operation of the test process, or characteristics of personnel—it is classified as a product metric. The size measure and the defect-counting rules should be defined consistently so that observed trends and comparisons are meaningful. See the ISTQB Glossary definition of defect density and the ISTQB Advanced Level Test Management certification page.

QUESTION NO: 8

Reviews

Consider the following list of statements about audits and management reviews:

I. Audits are usually more effective than management reviews at finding defects

II. Audits and management reviews have the same main goals, the only difference is related to the roles and level of formality

III. A typical outcome of an audit includes observations and recommendations, corrective actions and a pass/fail assessment

IV. An audit is not the appropriate mechanism to use at the code review in order to detect defects prior to dynamic testing

Which of the following statements is true?

Number of correct responses: 1

K21 credit

A. I. and III. are true; II. and IV. are false;

B. II. and III are true; I. and IV. are false;

C. III. and IV. are true; I and II are false;

D. I, III and IV are true; II. is false;

ANSWER: C

Explanation:

III. and IV. are true; I and II are false; is correct. In the ISTQB Advanced Level Test Management syllabus, an audit is defined as an independent examination of work products and processes to assess compliance with standards, guidelines, plans, contractual obligations, or legal requirements. Its outcomes normally document observations and recommendations, may identify required corrective actions, and can provide a pass/fail-style assessment of compliance. This makes the statement about typical audit outcomes accurate.

An audit is also not intended to serve as a defect-detection code review before dynamic testing. Detecting defects in source code is a technical review objective, typically addressed through an inspection, walkthrough, or other peer review technique. Audits instead evaluate whether the applicable process and required controls have been followed, rather than systematically examining code for faults. The syllabus distinguishes these purposes: management reviews support management decisions and control, while audits independently assess conformance. See the ISTQB Advanced Level Test Management certification page and the ISO 19011 auditing-guidelines standard page for the audit principles and independent evaluation context.

QUESTION NO: 9

You are not confident with the assessment of the risk level and you suspect that it will be possible to find high-priority bugs in low-risk areas.

Furthermore the period for test execution is very short. Your goal is to test all the product risks in a risk-based way, while assuring that each product risk gets at least some amount of testing.

Product risk	Risk level	Test Cases
R1	25	T1, T2
R2	12	T3, T4
R3	10	T5, T6
R4	8	T7, T8
R5	2	T9, T10

Which of the following answers describes the best test execution schedule in this scenario?

Number of correct responses: 1

K3 2 credits

A. T1, T2, T3, T4, T5, T6, T7, T8, T9, T10

B. T1, T3, T5, T7, T9, T2, T4, T6, T8, T10

C. T10, T9, T8, T7, T6, T5, T4, T3, T2, T1

D. T10, T8, T6, T4, T2, T9, T7, T5, T3, T1

ANSWER: B

Explanation:

T1, T3, T5, T7, T9, T2, T4, T6, T8, T10 is the best schedule because it gives every identified product-risk area an initial level of test coverage before allocating the remaining execution time to additional testing. The first sequence, T1 through T9 in alternating order, spreads execution across the risk areas rather than consuming the available time on one area at a time. This is especially appropriate when the risk assessment is uncertain: a risk initially rated lower may still contain a severe defect, so early testing should not be restricted only to the areas believed to be highest risk.

Risk-based testing uses product-risk information to guide the amount, type, and order of testing, but it also requires the test manager to account for uncertainty in the assessment. Where time is severely constrained, obtaining a first testing pass across every risk provides broad defect-detection opportunity and ensures that no product risk is left completely untested if execution ends early. After that baseline coverage has been achieved, the remaining tests can deepen coverage in the

planned order. This applies the risk-based principle pragmatically while protecting against incorrect risk estimates. See the ISTQB Test Manager certification information and the ISTQB Test Management syllabus for risk-based test management principles.

QUESTION NO: 10

Test Management

You are the Test Manager on a project following an iterative life-cycle model. The project should consist of nine iterations of one month duration each. It is planned to develop the most important features to have a stable core of the application in the first three iterations and to add the additional features in the last six iterations.

At the beginning of the first iteration, only a draft version of the requirements specification document for the core features is available. Assume that during each of the first three iterations, the chosen features are fully completed and unit tested.

Which of the following statements is true in this context?

Number of correct responses: 1

K4 3 credits

A. The system test phase should start when all the requirements are frozen

B. You should allocate a large effort for system testing during the first three iterations

C. You should allocate all the effort for the system test phase only in the last iteration

D. You should apply the same test strategy as used in a sequential life cycle model

ANSWER: B

Explanation:

You should allocate a large effort for system testing during the first three iterations. In an iterative life cycle, each iteration delivers a completed increment of selected functionality, rather than postponing integration and system-level evaluation until the entire product has been built. Since the project deliberately develops the most important features first to establish a stable application core, those early increments carry significant product and project risk. System testing during these iterations provides prompt feedback on end-to-end behavior, interfaces, quality attributes, and the integration of the completed, unit-tested features. It also helps establish and mature the system-test environment, test data, regression suite, and testware that will be reused as additional features are introduced in later iterations.

The draft nature of the initial requirements does not prevent this work. Test analysis can begin from the available specification and be refined as requirements are clarified; executing system tests against each completed increment gives the team early evidence about whether the emerging core supports the intended system behavior. This aligns test activities with the iterative delivery cadence and makes defects in the core cheaper to detect and resolve before further functionality depends on it. See the ISTQB Test Management certification page and the ISTQB Advanced Level certification overview.

QUESTION NO: 11

You have done a comprehensive risk analysis. You have involved the appropriate people in assessing the risks and determining the likelihood and impact of those risks. You have been testing for three months and have been able to mitigate 75% of the high risk items. You have two weeks left in testing and you now do not expect to be able to complete all the items on the high-risk

mitigation list, never mind any from the medium or low-risk lists.

What is the most effective action you should take? [3]

A. Use a random selection algorithm to pick tests from the high, medium, and low risk mitigation lists - thereby ensuring that each risk list has some mitigation.

B. Present your risk mitigation progress and project status to the project's stakeholders, and request additional time or assistance in re-prioritizing the remaining high-risk items.

C. Concentrate testing in areas that have already found numerous problems.

D. Retest the highest risk areas to ensure no regressions have occurred.

ANSWER: B

Explanation:

Present your risk mitigation progress and project status to the project's stakeholders, and request additional time or assistance in re-prioritizing the remaining high-risk items. This is the most effective action because risk-based testing is not a one-time planning activity: the Test Manager monitors progress, reassesses risks and constraints, and communicates material status information so that the appropriate stakeholders can make informed business decisions. With only two weeks remaining and some high-risk mitigation still incomplete, the residual risk may be unacceptable for the intended release. The Test Manager should therefore make the situation visible, including the high-risk items still outstanding, their potential impact, the expected test effort, and feasible choices such as supplying additional resources, extending the schedule, reducing scope, or formally accepting residual risk. Re-prioritization must involve the stakeholders who own the product and release decisions, since they are accountable for balancing delivery objectives against the consequences of unresolved risks. This approach preserves traceability from the risk assessment through testing status to a documented decision, while focusing the remaining effort on the greatest value and exposure. The Test Manager syllabus identifies risk analysis, test monitoring/control, and reporting to stakeholders as core Test Manager responsibilities. See the ISTQB Advanced Level Test Management certification page and the ISTQB official website.

QUESTION NO: 12

Test Tools and Automation

In your organization the following tools of the same vendor are currently in use: a requirements management tool, a test management tool and a bug tracking tool.

You are the Test Manager.

You are currently evaluating a test automation tool of the same vendor (to complete the vendor's tool suite) against an interesting open-source test automation tool under the GNU GPL (General Public License).

There are no initial costs associated to that open-source tool.

Which of the following statements associated to the selection of the open-source tool is correct in this scenario?

Number of correct responses: 1

K2 1 credit

A. The open-source tool can be modified but only if the community of developers of that tool gives you the formal permission to modify it

B. There are no initial costs for the open-source tool but you should carefully consider the costs associated to the integration with the existing tools and also evaluate the recurring costs

C. There are no initial costs for the open-source tool because open-source tools are usually low-quality, while vendor tools have always a better quality than the corresponding open-source tools

D. The open-source tool can be modified but it can't be distributed further in any way

ANSWER: B

Explanation:

There are no initial costs for the open-source tool but you should carefully consider the costs associated to the integration with the existing tools and also evaluate the recurring costs. This is correct because a zero licence-acquisition cost does not make the total cost of ownership zero. The Test Manager must assess the effort and expense needed to connect the new

automation tool with the organization's requirements management, test management, and defect-tracking tools. Integration may require interfaces, adapters, data mapping, workflow configuration, custom development, and ongoing maintenance when either tool changes.

Recurring costs must also be evaluated over the intended lifetime of use. Relevant factors include installation and environment maintenance, training, test-automation framework development, support arrangements, upgrades, administration, and the specialist skills needed to operate and evolve the tool. These costs are particularly important here because the existing commercial tools are from one vendor; selecting a different tool can affect interoperability and the effort required to maintain an end-to-end traceability and reporting workflow. The GNU GPL provides important rights concerning use, study, modification, and redistribution, but it does not remove the practical costs of adopting and maintaining a tool. See the GNU GPL text at GNU.org and ISTQB's Test Manager certification overview at ISTQB.

QUESTION NO: 13

People Skills – Team Composition

Which of the following would you expect to be most likely an example of a demotivating factor for testers?

Number of correct responses: 2

K21 credit

A. The management asks the testers to be kept informed about the intensity, quality and results of testing

B. The testers' recommendations to improve the system or its testability are adopted by the development team

C. The same regressions tests are manually executed by the same testers, for every product release, without regression test tools

D. The testers are assessed on whether and how often they detect important and critical failures

E. Test quality is measured by counting the number of customer/user reported problems.

ANSWER: C D

Explanation:

The same regressions tests are manually executed by the same testers, for every product release, without regression test tools is demotivating because it creates repetitive, low-variety work with limited opportunity for testers to apply analysis, investigation, and professional judgement. The Test Manager syllabus identifies repetitive manual work as a potential source of reduced motivation and highlights the value of providing work that uses people's skills effectively. Appropriate automation can reduce this burden and allow testers to focus on higher-value test activities.

The testers are assessed on whether and how often they detect important and critical failures is also demotivating because it makes an individual tester's appraisal depend on a metric that is not fully under that tester's control. Defects found depend on many factors, including product risk, development quality, test scope, timing, and the available test environment. Such a measure can also encourage counterproductive behaviour rather than collaboration and risk-based testing. Test managers should use fair performance management that recognizes useful testing contributions and supports team goals. These people-management principles are covered in the ISTQB Advanced Level Test Management certification material: ISTQB Test Management certification and its Advanced Level certification overview.

QUESTION NO: 14

You are the manager of a test team. You inherited most of these people from a previous manager who promoted technical skills, particularly

programming skills. As a result, your people are very strong in test automation skills, white box testing and complex test design

techniques. You have just been told that you can hire five new people. You want the new people to complement the existing skill sets and

you want to be sure the team will have a strong mutual respect.

Given the following options, who should you hire? [3]

A. Hire all black box testers because you are severely lacking in that skill set.

B. Hire customer support people who have experience with the customer interface.

C. Hire a mix of people with strong testing and domain skills.

D. Hire college interns who can be trained by the existing people.

ANSWER: C

Explanation:

Hire a mix of people with strong testing and domain skills. The inherited team already has substantial technical depth in programming, automation, white-box testing, and sophisticated test design. A recruitment decision should therefore balance the team's overall capability rather than merely maximize one existing specialty. Testers with broad testing competence contribute sound test-process knowledge, analysis, communication, and the ability to select and apply suitable techniques. Domain-skilled people add understanding of business processes, user workflows, operational risks, and the quality characteristics that matter to customers and stakeholders. Together, these strengths improve the team's ability to identify meaningful test conditions, assess product risks, communicate effectively with business representatives, and provide useful quality information for decisions. This blend also supports mutual respect because team members bring complementary expertise and can recognize the value of both technical and business perspectives. The ISTQB Test Manager syllabus emphasizes that effective test teams require an appropriate balance of skills, including technical, business-domain, interpersonal, and testing skills; staffing is part of building and maintaining a team capable of meeting the project's testing objectives. See the ISTQB Test Management certification information and the ISTQB Advanced Level certification overview.

QUESTION NO: 15

People Skills – Team Composition

You are forming a system test team for a project that will integrate a new warehouse-management application with barcode scanners, an enterprise resource planning system and external shipping providers. The project has a high level of interface and operational risk.

Which THREE of the following skills would be especially important within the test team?

Number of correct responses: 3

K3 2 credits

A. Knowledge of relevant interface technologies, protocols and message formats

B. Understanding of warehouse operations and shipping workflows

C. Analytical and communication skills for investigating cross-system failures

D. Specialist expertise in graphic design for marketing material

E. A preference for working independently without contact with operational stakeholders

ANSWER: A B C

Explanation:

Knowledge of interface technologies and message formats is important because the application exchanges information with several connected systems. Understanding warehouse operations is important for designing realistic end-to-end flows and identifying business consequences of failures. Strong analytical and communication skills are needed to investigate failures that span multiple systems and to coordinate evidence, defect information and corrective actions with technical and operational stakeholders.

Graphic design expertise and a preference for working without stakeholder contact are not key skills for the stated integration and operational risks. The Test Manager should compose a team whose combined technical, domain and interpersonal capabilities match the risks, technologies and organizational context of the project.

QUESTION NO: 16

Reviews

You are planning a formal review of a requirements specification for an emergency-call handling system. The review objective is to find defects in the requirements before detailed design begins.

Which THREE of the following activities are responsibilities of the moderator of the formal review?

Number of correct responses: 3

K3 2 credits

A. Check that the review entry criteria have been met

B. Facilitate the review meeting and manage the discussion

C. Ensure that findings, decisions and action items are recorded and followed up

D. Correct all defects identified in the requirements specification

E. Approve the business content of the requirements on behalf of the customer

ANSWER: A B C

Explanation:

The moderator is responsible for managing the formal review process. This includes checking that entry criteria have been met, planning and facilitating the review meeting, and ensuring that review results and action items are recorded and followed up. These activities help the review proceed in a controlled, objective and efficient manner.

The moderator does not own the work product and should not be the person who corrects the defects found in it. The author retains responsibility for the work product and for correcting agreed defects. Individual reviewers prepare for the review and identify issues based on their technical and domain knowledge. The distinction between moderator, author and reviewer roles supports the independence and discipline expected in a formal review. See the ISTQB glossary definition of moderator and the ISTQB glossary definition of formal review.

QUESTION NO: 17

Test Tools and Automation

Assume you are the Test Manager in charge of independent testing for avionics applications.

You are in charge of testing for a project to implement three different CSCI (Computer Software Configuration Item):

- a BOOT-X CSCI that must be certified at level B of the DO-178B standard

- a DIAG-X CSCI that must be certified at level C of the DO-178B standard

- a DRIV-X CSCI that must be certified at level A of the DO-178B standard

These are three different software modules written in C language to run on a specific hardware platform.

You have been asked to select a single code coverage tool to perform the mandatory code coverage measurements, in order to meet the structural coverage criteria prescribed by the DO-178B standard. This tool must be qualified as a verification tool under DO-178B.

Since there are significant budget constraints to purchase this tool, you are evaluating an open-source tool that is able to provide different types of code coverage. This tool meets perfectly your technical needs in terms of the programming language and the specific hardware platform (it supports also the specific C-compiler).

The source code of the tool is available.

Your team could easily customize the tool to meet the project needs. This tool is not qualified as a verification tool under the DO-178B.

Which of the following are the three main concerns related to that open-source tool selection?

Number of correct responses: 3

K4 3 credits (2 credits out of 3 credits correct, 1 credit point)

A. Does the tool support all the types of code coverage required from the three levels A, B, C of the DO-178B standard?

B. Does the tool have a good general usability?

C. What are the costs to qualify the tool as a verification tool under the DO-178B?

D. Is the installation procedure of the tool easy?

E. Does the tool require a system with more than 4GB of RAM memory?

F. Is the licensing scheme of the tool compatible with the confidentiality needs of the avionics company?

ANSWER: A C F

Explanation:

The tool must support all structural coverage types required across the applicable software levels. In DO-178B practice, Level C requires statement coverage, Level B requires decision coverage, and Level A additionally requires modified condition/decision coverage. Since one common tool is intended for all three CSCIs, its coverage capability must satisfy the most demanding Level A need while also producing evidence suitable for the other levels. This is central to demonstrating structural coverage from requirements-based testing.

Qualification cost is a major selection concern because the tool is intended to act as a verification tool and is currently unqualified. The project must plan the evidence, lifecycle data, configuration control, operational requirements, and validation needed to establish confidence that tool errors will not invalidate or improperly replace required verification activities. An initially free open-source product can therefore carry substantial qualification and maintenance cost, especially after customization.

Compatibility of the licensing scheme with the avionics company's confidentiality needs is equally essential. Open-source licenses impose differing obligations concerning source availability, redistribution, modification notices, and treatment of derivative works. The organization must ensure that using, modifying, and potentially delivering artifacts associated with the tool does not conflict with proprietary CSCI source code, certification records, supplier agreements, or customer confidentiality obligations. The FAA's AC 20-115D describes accepted software-approval guidance and recognizes DO-330 tool-qualification considerations; the RTCA publishes the relevant DO-178 and DO-330 standards.

QUESTION NO: 18

People Skills – Team Composition

Consider the following analysis of testing skills performed on four people: Alex, Robert, John and Mark (all the skills have been rated on an ascending scale: The higher the score, the better the skill):

Testing Skills	Alex	Roberta	John	Mark
Planning				
Estimation and Cost of Quality	3	2	2	5
Documentation	3	3	2	5
Quality Risk Analysis/ Management	2	3	2	5
Design/Development				
Behavioral (Black-Box)	3	5	2	2
Structural (White-Box)	3	5	3	1
Static (Reviews and Analysis)	3	4	3	2
Test Automation				
COTS Execution Tools	5	2	4	3
COTS Test Management	5	2	4	3
Test Data Generators	5	2	4	3
Execution				
Manual (Scripted and Dynamic)	3	3	4	3
Automated	3	3	4	3
Test Status Reporting and Metrics	2	4	4	3
Average Testing Skills	3,36	3,17	3,17	3,15

Which of these people, based on this analysis, would you expect to be most suitable to work specifically as test designer?

Number of correct responses: 1

K4 3 credits

A. Alex

B. Robert

C. John

D. Mark

ANSWER: B

Explanation:

Robert is the most suitable choice because the skills analysis indicates the strongest fit for the test designer role. A test designer transforms the test basis into effective test conditions, test cases, and test procedures. This work particularly depends on analytical capability: understanding requirements and risks, identifying relevant conditions and combinations, selecting appropriate test techniques, and specifying tests precisely enough that they can be implemented and executed consistently. It also requires the discipline to document testware clearly and to maintain traceability between requirements, conditions, and tests.

Within an Advanced Level test team, assigning people according to the skill profile needed for a particular role is an important test-management activity. The test designer role is therefore best allocated to the person whose assessed profile most strongly supports analysis and test-case design rather than merely general testing participation. The name is corrected from “Roberta” to “Robert” because the scenario identifies the assessed person as Robert. ISTQB describes Advanced Level Test Management as including the organization, leadership, and improvement of testing activities; this includes selecting suitable people for required testing responsibilities. See the ISTQB CTAL Test Management certification page and the ISTQB Glossary entry for test designer.