Sample Exam – Answers

Sample Exam set A
Version 1.1

ISTQB® Improving the Test Process, part 2: Implementing Test Process Improvement Syllabus Expert Level

Compatible with Syllabus version 1.0

International Software Testing Qualifications Board

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

This document is maintained by a core team from ISTQB® consisting of the Syllabus Working Group and Exam Working Group.

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Revision History

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Version	Date	Remarks
1.1	February 17, 2022	Replacement of deprecated Keywords Update of template
1.0.1	June 4, 2021	Update of Copyright Notice
1.0	October 23, 2015	First version

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Introduction

Purpose of this document

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

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

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

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

Instructions

In this document you may find:

- Answer Key table, including for each correct answer:
  - K-level, Learning Objective, and Point value
- Answer sets, including for all questions:
  - Correct answer
  - Justification for each response (answer) option
  - K-level, Learning Objective, and Point value
- Additional answer sets, including for all questions [does not apply to all sample exams]:
  - Correct answer
  - Justification for each response (answer) option
  - K-level, Learning Objective, and Point value

- *Questions are contained in a separate document*

Answer for Multiple Choice Questions

Answer Key

Question Number (#)	Correct Answer	LO	K-Level	Points
1	c	EITP-5.1.1	K2	1
2	a	EITP-5.4.1	K2	1
3	d	EITP-5.4.2	K4	3
4	a	EITP-5.4.2	K4	3
5	a	EITP-5.4.3	K2	1
6	b	EITP-5.4.4	K2	1
7	d	EITP-5.5.2	K4	3
8	c	EITP-6.1.1	K2	1
9	c	EITP-6.1.2	K4	3
10	c	EITP-6.1.3	K2	1
11	b	EITP-6.2.1	K2	1
12	b	EITP-6.3.3	K3	2
13	c	EITP-6.3.3	K3	2

Question Number (#)	Correct Answer	LO	K-Level	Points
14	b	EITP-7.3.4	K3	2
15	a	EITP-6.3.5	K2	1
16	a	EITP-7.2.1	K2	1
17	b	EITP-7.3.1	K2	1
18	a	EITP-7.3.2	K4	3
19	b	EITP-8.1.1	K2	1
20	d	EITP-8.2.1	K2	1
21	c	EITP-9.1.1	K2	1
22	c	EITP-9.1.2	K2	1
23	b	EITP-9.1.2	K2	1
24	b	EITP-9.1.3	K2	1
25	d	EITP-9.1.4	K2	1

Answers

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
1	c	1) Incorrect statement. A test policy needs to outline the typical test process, but the ISTQB fundamental test process may be used as a basis and is not necessary 2) Correct statement. The test policy specifies how the organization will improve its test processes 3) Incorrect statement. The test policy defines the objectives of testing that should be further specified in the test strategy concerning the concrete project(s) 4) Correct statement. The evaluation of the effectiveness and efficiency of testing in meeting these objectives is also described in the test policy and further detailed in subsequent documents (test strategy and test plans) 5) Correct statement. Summarizing the value that the organization derives from testing is the very first key element of the test policy Thus: a) Is not correct b) Is not correct c) Is correct d) Is not correct	EITP-5.1.1	K2	1

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
2	a	a) Is correct. This activity is part of develop an approach, which is performed during the Establishing phase of the IDEAL improvement model b) Is not correct. This activity is part of characterize the current and desired states, which is performed during the diagnosing phase of the IDEAL improvement model c) Is not correct. This activity is part of Analyze and validate, which is performed during the Learning phase of the IDEAL improvement model d) Is not correct. This activity is part of create solutions, which is performed during the Acting phase of the IDEAL improvement model	EITP-5.4.1	K2	1

3	d	• Recommendation 1) – Correct. Use a defect taxonomy to identify the 100 test cases with the highest potential for finding defects - positive: focuses on test effectiveness - positive: can be done within 6 months - positive: cost-effective • Recommendation 2) – Correct. Perform training sessions to enable testers to do more effective exploratory tests - positive: focuses on test effectiveness - positive: can be done within 6 months - positive: uses available functional testing skills - positive: highly cost-effective • Recommendation 3) – Incorrect. Capture all test cases in a test management tool - negative: does not favor effectiveness over documentation - negative: low cost-effectiveness for all 5,000 test cases (major effort) - positive: having test cases organized within a test management tool would help raise the efficiency of testing and enable a more mature test process • Recommendation 4) – Incorrect. Automate 80% of test cases. - negative: more on efficiency than a specific focus for test effectiveness - negative: only functional testing skills available (not automation skills) - negative: likely to be expensive in short term (tool licenses, automation of 4,000 test cases) - negative: this may take more than 6 months to implement - positive: would help raise maturity levels once implemented • Recommendation 5) – Correct. Introduce a dedicated environment for testing - positive: A dedicated test environment will enable more effective testing (e.g., more control over specific test data)	EITP-5.4.2	K4	3

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
		and more efficiency (e.g., fewer test repetitions due to software configuration issues and better environment availability) - negative: this may well require skills that are not available within the test team - neutral: can expect to see a positive return on investment within 6 months but could also be costly - positive: would help raise maturity levels (e.g., more controlled staging from development to test to production) • Recommendation 6) – Incorrect. Gather metrics to enable the use of test techniques to be optimized - negative: the recommendation is more applicable to achieving a test process maturity which is "optimizing". The current test process maturity is only "initial", so this recommendation is not appropriate now - negative: more a medium-term improvement - positive: relates to test effectiveness Thus: a) Is not correct b) Is not correct c) Is not correct d) Is correct			

4	a	• Recommendation 1) – Correct. Defining a strategy regarding regression testing and retesting for both pilot projects need not take much time but can highly improve effectiveness. This could be done this fiscal year in both projects • Recommendation 2) – Incorrect. Although defining test levels is an important recommendation, there is no quick win in it. Moreover, defining them thoroughly means a cultural change that is better postponed to the next fiscal year where more experienced personal and/or external consultants can support this objective, and better introduced in a pilot project that creates a new product. Using a project with only maintenance or upgrading of a product has the disadvantage of changing habits within an existing framework and may create much opposition • Recommendation 3) – Correct. For project A the participation of testers in reviews seems inadequate. In project B it will be important and probably results in much higher quality. As there is an inspection leader in the software process improvement team this could be introduced quite well • Recommendation 4) – Incorrect. This recommendation needs much time for analysis by a skilled person and additional help with the interpretation by testers and developers in the historic projects. Therefore, the given personnel stated above are not adequate for this task. This could be something, which is prepared at the end of this fiscal year, and then a separate interpretation and improvement initiative for the next fiscal year is proposed to the management. Moreover (when looking at recommendation 5) testers do not yet have the appropriate knowledge and need a qualification first which also is unlikely to be payable for in the actual fiscal year • Recommendation 5) – Incorrect. Qualification of testers (i.e., training) in project B could be starting directly, but it is questionable whether the money is sufficient for that. The	EITP-5.4.2	K4	3

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
		historical analysis and selection of test design techniques needs time and money and must be postponed to the next fiscal year. Using more adequate test techniques results in a reduced error rate in the field • Recommendation 6) – Incorrect. A first draft of an automation strategy could be implemented in Project A and B and result in less rework done by the automation testers. Both pilot projects are not well suited to pilot the automation strategy because many tests are already automated, and the data therefore is biased • Recommendation 7) – Correct. This is a quick win that should be implemented very quickly. Parallels to overall quality paradigms make it easy to convince management that something must be done Thus: a) Is correct b) Is not correct c) Is not correct d) Is not correct			
5	a	a) Is correct. 1, 3 and 5 are features of a top-down approach, 2 and 4 are features of a bottom-up approach b) Is not correct. See correct answer c) Is not correct. See correct answer d) Is not correct. See correct answer	EITP-5.4.3	K2	1

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
6	b	a) Is not correct. The specific areas to be covered in each assessment interview are part of the assessment plan b) Is correct. A description of tasks to be performed, based on the recommendations, is part of a test improvement plan c) Is not correct. The scope of test process improvement is considered in the initiating phase and is part of the test policy and/or test improvement strategy. This task is performed before any assessment has taken place and before the implementation of any recommendations can be planned d) Is not correct. A General vision for the future is part of the test (improvement) policy	EITP-5.4.4	K2	1

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
7	d	a) Is not correct. The implementation of a test automation strategy may help Project A, but it most probably is a different strategy than in most other projects. Project D is a much more typical project that should therefore be preferred b) Is not correct. All projects are risky. As the project definition and planning phase have already begun, it is a suitable time to check the skills of potential test team members and start qualifying them so they can learn and later use new test techniques. Even with innovative products the domain of the company will likely stay the same, so outcomes of the pilot may be helpful for all other development projects c) Is not correct. Project F has already begun although it is shortly stopped. Therefore, the impact for staff might not be acceptable. Data from the first part may no longer be usable in the second part and therefore, statistics may be biased. Since it has already been stopped opens the possibility that it will be stopped a second time, so the risk of getting no outcomes from the piloting is high d) Is correct. Project D will start later than Project B, therefore, it will give enough time for the project team to learn about the new test levels. Defining, training, and establishing the test levels including all the criteria, documents and metrics is more work than can be done in a short time. Moreover, Project D seems to be a more typical project than Project B and especially Project C, so the outcome of the pilot may be more representative	EITP-5.5.2	K4	3

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
8	c	a) Is not correct. While this might be a task for test process group (TPG), the purpose of TPG is to make improvements b) Is not correct. While this might be a task for a TPG, this may also be organized outside the scope of a TPG and certainly does not require a TPG to have a permanent structure c) Is correct. A TPG that exists only for a limited time might disband before change is done d) Is not correct. A TPG can liaise with other process groups in the organization	EITP-6.1.1	K2	1

9	c	a) Is not correct. This solution implements improvement only in one project and not the many projects affected within the organization. Ownership of the test process is not guaranteed by a single-project solution. Since this is an in-house project, there is also a risk of political, cultural, or contractual misunderstandings with the offshore location developing the test automation b) Is not correct. This solution is better than solution A, but ownership of the test process is still not guaranteed across the organization. A permanent test process group is a good thing, but the staffing could well be a problem. If the staff are taken from a discontinued in-house project, there may be skills issues regarding test process improvements and there may be acceptance problems based depending on the reason for the project being discontinued. Like "A" the staff are taken from an in-house project, which brings a risk of political, cultural, or contractual misunderstandings with the offshore location developing the test automation c) Is correct. A Management Steering Group (MSG) coordinates the test process improvements across the organization and has ownership of the test process. Tasks can be delegated, as shown by the example of the test automation improvement, which is coordinated by a separate technical working group (TWG). The TWG explicitly takes on the communication task, which mitigates the political, cultural, or contractual risks mentioned in solutions A and B d) Is not correct. Establishing an MSG will help to establish and implement test process improvements across the organization and provide an owner for the test process. However, the MSG should not take on the management of contractual issues with the offshore company implementing the test automation. The MSG has no specialist groups (e.g., TWGs to delegate improvement tasks to and is therefore responsible for all improvement tasks that is not a preferred situation. An MSG should deal principally with management issues at the organization level	EITP-6.1.2	K4	3

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
10	c	a) Is not correct. Outsourcing or off-shoring has a significant impact on all parts of test improvement program: gathering information to understand the situation and implementing the change b) Is not correct. Gathering information is indeed more time-consuming, but so is the implementation of changes, in addition to other matters (political, cultural, contractual, etc.) c) Is correct. The focus for improvement teams in these cases should be on any political, cultural, or contractual (mis)understandings that may need improvement d) Is not correct. Offshore parts of the software development lifecycle or just the testing process can be included in the overall test improvement program	EITP-6.1.3	K2	1
11	b	a) Is not correct. The tasks listed are part of the assessment process, for reasons of independence this is typically performed by an outsider b) Is correct. These are tasks to be performed by a lead-assessor c) Is not correct. An assessor will support these tasks but not perform interviews nor write reports by themselves d) Is not correct. The test manager will typically be an interviewee, not the person performing the interview	EITP-6.2.1	K2	1

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
12	b	a) Is not correct. With the mind map you usually shorten and classify information on the fly. Regardless, your opinions are missing from these notes b) Is correct. Here you have quick classification of information enabled by the mind map. In addition, you have made notes about underlying negative comments about test environment quality c) Is not correct. Here you shorten your notes as is typical in using a mind map, but you have not listened to what they are saying about quality, nor have you made any notes about it d) Is not correct. This information is not suited to a mind map. You are making notes about potential problems but might be missing some of them	EITP-6.3.3	K3	2

13	c	• Statement 1 – Correct. Yes, the one-time Richard uses a closed ended question is ok, because he is not suggesting anything towards "correct" behavior and tries to keep the conversation going with it. Moreover, he returns to an open-ended question right afterwards
		• Statement 2 – Incorrect. There is no hint of emotional intelligence with Richard. He could have tried to ask about the emotions when Sheila only hears rumors, and the official information is at least a month later. Additionally, he never asks about how she feels during their conversation
		• Statement 3 – Incorrect. It is vague as to whether Sheila shows codependent behavior, but she does not question her test manager's orders or the whole process of the project start-up and later phases. Richard does not document anything about it and does not seem to even notice it
		• Statement 4 – Incorrect. Richard's opening would have been much better, if he also:
		  • told something about his or the company's objectives concerning the interview,
		  • informed her about what will happen with the information he gathers,
		  • asks for consent to record the interview (he is not waiting for an answer!), and
		  • gave Sheila the opportunity to talk more about herself and her job
		• Statement 5 – Incorrect. Sheila does not react like a "Critical Parent" (transactional analysis). She shows some emotions of fear or unsureness so "Compliant Child" could be the most appropriate. Richard seems to notice it and tries to reassure her with a calm voice, a smile, and helpful questions
			EITP-6.3.3	K3	2

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
		• Statement 6 – Incorrect. Active listening includes repetition of answers including hidden emotions. Richard does not repeat or summarize in any way • Statement 7 – Incorrect. Using mind maps in interviews is neither correct nor incorrect, but a helpful tool. The use of recordings is questionable and without consent by the interviewee is incorrect Thus: a) Is not correct b) Is not correct c) Is correct d) Is not correct			

14	b	• Statement 1: This is a coincidence; it has no relationship whatsoever with test cases no longer being documented • Statement 2: There is a cause effect relationship between some senior testers stopping the documentation of test cases (cause) and the same behavior being adopted for all tests (effect). This relationship is described in Tipping Point theory. It explains that "bad practices" often will spread quickly throughout an organization, especially if senior staff are responsible (e.g., "if they are not documenting test cases then why should I do it ?") • Statement 3: A correlation can be established between having no more test cases documented and an increase in test executions. It may be argued that the increased number of tests has led to fewer test cases being documented because resources have stayed the same. It cannot be argued that this is a direct cause and effect; there is no evidence that available resources have remained fixed • Statement 4: There is a correlation with the observation regarding test case documentation. There is, however, no direct cause-effect relationship. It cannot be argued that fewer documented test cases have caused the reduction in reported defects • Statement 5: This is a coincidence; it has no relationship with test cases no longer being documented • Statement 6: There is a cause effect relationship between the training no longer being available (cause) and stopping the documentation of test cases (effect). It is a realistic assumption that the training encourages the documentation of test cases as good testing practice Thus: a) Is not correct b) Is correct c) Is not correct	EITP-7.3.4	K3	2

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
		d) Is not correct			
15	a	a) Is correct. This indeed is a key element for presentation and reporting skills since often, a test process assessment results in a large amount of information that needs to be correctly summarized b) Is not correct. This is a skill especially needed during interviewing c) Is not correct. This is also a skill that can be applied in the context of performing interviews d) Is not correct. This is related to the management skills that a test process improver must also possess, e.g., making decisions about the need for specific test process improvements	EITP-6.3.5	K2	1
16	a	a) Is correct. Step 4 from the fundamental change process is missing "Communicate for understanding and buy-in". b) Is not correct. "Implement improvements one at a time" is not recommended as part of a change management process. However, it is quite possible that several improvements are implemented in parallel c) Is not correct. "Lead from the front" is not recommended. Change management typically involves creating buy-in from all affected stakeholders and is not a process led entirely by an individual d) Is not correct. "Make an impact with management" is not part of a fundamental change management process. However, obtaining management buy-in and informing them of progress is important	EITP-7.2.1	K2	1

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
17	b	a) Is not correct. The change management process must allow for differences in attitude to change when planning the improvement implementation b) Is correct. An individual or team's reaction to change depends on their previous experience with change implementation and other things c) Is not correct. An individual or team's reaction to change depends on the level of trust in the organization and other things d) Is not correct. The change management process must allow for awareness, discussion, and differences in attitude to change when planning the improvement implementation. You do not train just for proper attitude. It is not that simple	EITP-7.3.1	K2	1
18	a	a) Is correct. Stage transforming ideas is the way out of the chaos, which in turn is the reaction to the disrupting event. The testers' reaction was enthusiastic, and developers' reaction was skeptic, but both are now starting the see a way forward b) Is not correct. Denial and acceptance stage are part of the Kübler-Ross model. Moreover, developers are not any more in denial within the described project situation c) Is not correct. New status quo is the end state of the Satir model, and the team is not yet there d) Is not correct. Acceptance stage is part of the Kübler-Ross model; there is no acceptance stage within the Satir model	EITP-7.3.2	K4	3

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
19	b	a) Is not correct. This may happen but is not the main risk initially b) Is correct. When constraints (e.g., the maturity of the development process) are not in place, test improvements may fail because of this c) Is not correct. The immaturity of the development process does not relate to setting clear test improvement objectives and relating these to business goal d) Is not correct. This would be the case if process improvement within development would become part of test improvement. Typically, a test improvement program will focus on test improvements only	EITP-8.1.1	K2	1
20	d	a) Is not correct. There is no mention of relationships between organizations in this statement b) Is not correct. There is no mention whatsoever of life cycle models in this statement. c) Is not correct. This is not a factor but a statement of the Test process improvement manifesto d) Is correct. The countries refer to the geographical location being relevant for setting the correct improvement culture	EITP-8.2.1	K2	1
21	c	a) Is not correct. This is an adaptation of project triangle b) Is not correct. Time is always needed but not really a context factor. Also, the syllabus does not mention experience of the people c) Is correct. The syllabus mentions these three items as factors concerning setting improvement to context d) Is not correct. None of the items is mentioned in the syllabus, but the targeted quality level is not a standard context factor, and the syllabus also does not mention experience of the people. Test strategy is related to test approach	EITP-9.1.1	K2	1

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
22	c	a) Is not correct. Exploratory testing may well be an important part of the approach with Agile software development. However, automation and some scripted testing are often also part of Agile testing b) Is not correct. Both content-based models and test improvement models can be used but may need to be tailored. With TMMi a specific implementation for Agile software development is under development c) Is correct d) Is not correct. There will be retrospective meetings at end of each iteration. Phase ending is a typical characteristic of sequential development models	EITP-9.1.2	K2	1
23	b	a) Is not correct. Statement 4 is untrue since a retrospective meeting should be a whole team effort not with just the key stakeholders b) Is correct. Statements 1 and 3 are true as documented in the syllabus c) Is not correct. Statement 1 is true and statement 4 is untrue d) Is not correct. Statement 2 on test closure phase applies to sequential development models not to Agile software development	EITP-9.1.2	K2	1
24	b	a) Is not correct. Test improvement models are intended to be software development lifecycle independent and not specifically aimed at iterative development models b) Is correct. Typically after each iteration, there is an evaluation or retrospective meeting which provides an opportunity to address test improvements c) Is not correct. Test improvement in iterative development models should also address process, product, and tool issues d) Is not correct. This is typically a problem in iterative development models. Many of the improvements are local and project oriented and as such not at organizational level	EITP-9.1.3	K2	1

Question Number (#)	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-Level	Number of Points
25	d	a) Is not correct. This is determined via a product risk-analysis and not related to the software development lifecycle (SDLC) b) Is not correct. Number of testers is not primarily related to the SDLC being used, although the role of a tester will change being involved in an Agile project c) Is not correct. The number of test environments needed depends on many things but typically not on the SDLC being used d) Is correct. One of the main Agile software development principles is that documentation is created only where there is a clear unambiguous need for it	EITP-9.1.4	K2	

Answer for Essay Questions

Answers

Question #1
EITP-2.3.10 (K5) Assess a test organization using either the TPI Next or TMMi model
EITP-5.3.2 (K6) Plan and perform assessment interviews using a particular process or content-based model in which an awareness of interview style and interpersonal skills are demonstrated

Grading Criteria:

Task 1: "Assess critical success factors"

Maximum 30 points

Assess critical success factors regarding starting this improvement initiative and identify the possible risks (including rationale) related to the critical success factors.

Assign 2 points for each critical success factor (CSF) correctly identified (maximum 12 points).

Assign 3 points for each critical success factor correctly analyzed and potential risks identified maximum). The potential risk related issues are underlined in the text below (maximum 18 points).

Critical Success Factor	Analyses	Risk
Clear, measurable and realistic objectives for the improvement process are set	The overall objective of "TMMi level 3 by the end of next year" is clear and measurable. However, it may not be enough time (since it is already November/December and achieving TMMi level 3 usually takes a minimum of 18 months. As budget is "generous" it may be easy to compensate (partially) with more activity although changing people's behavior always takes time. However, being "realistic" depends on the current maturity level of MedoTech.	TMMi level 3 by end of next year not achieved

Critical Success Factor	Analyses	Risk
Management commitment and sponsorship available.	Here the commitment is not that clear as it may seem. Although announcing change in quality policy, establishing the TMMi initiative with a team and budget including an "Improvement Management Board" makes a nice impression of commitment. The true support will be obvious with deciding on risk mitigations and handling challenges later in time. Things have been put in place, but "the proof of the pudding is in the eating".	Decisions by management not done quick enough. Staff reduced for other projects / priorities throughout the lifetime of the improvement project
Test improvement organized as a formal project.	The quality improvement program currently is still lacking a formal project organization. Just assigning budget, team and an Improvement Management Board is not enough.	A formal project organization is lacking
People involved have sufficient time scheduled for participation	The team of 12 experts sounds good; whether other involved people (stakeholders) also have sufficient time allocated is unknown but may be problematic with the project that will be running.	Involved people (for example people that need to spent effort during pilots or for reviewing) from outside the core team do have not enough time available.
Ambitions mapped to the maturity of the (development) organization.	Since no test assessment has been done, this may be the case here, but is unknown to all.	Upper Management was over-optimistic. The objective of achieving TMMi level 3 cannot be achieved within the defined timeframe
Change management process established	No data about this issue are given in the case study. We therefore identify this as a risk.	Changes will fail due to not addressing change management.

Task 2: "Propose mitigation actions"

Maximum 20 points

Propose mitigation actions, including prioritization, for each of the risks identified during the assessment of critical success factors.

Assign 1 point for each risk and 0,5 points for each priority level, correctly identified (9 points maximum).

Assign 2 points for mitigation actions correctly identified (one mitigation per risk is sufficient) (maximum 12 points). 1 additional point can be given if multiple mitigation actions are correctly identified for a risk.

Critical Success Factor	Risk	Priority	Critical Success Factor
Overall objectives	TMMi level 3 by end of next year not achieved	Medium	Perform TMMi assessment to establish status and shortcomings for TMMi level 3. Introduce monthly progress reporting showing status against TMMi model
Management commitment and sponsorship available	Decisions by management not done quickly enough. Staff reduced for other projects / priorities set differently throughout the lifetime of the improvement project	Medium	Continuously involve and convince management on the need for the improvement project by showing current problems (and their consequences), results achieved by the improvement project preferably in terms of performance indicators that have a clear relationship to the business objectives
Test improvement organized as a formal project	A formal project organization is lacking	High	Define a detailed project plan for the improvement project including working packages and milestones
People involved have sufficient time scheduled for participation	Involved people (for example people that need to spent effort during pilots or for reviewing) from outside the core team do have not enough time available.	High	Plan the involvement of people involved outside the core team and discuss this with project management. Discuss problems with project management immediately when they surface and escalate to management when needed.
Maturity of development organization	Upper Management was over-optimistic. The objective of achieving TMMi level 3 cannot be achieved within the defined timeframe	medium	Perform an informal assessment on the development processes and organization. Analyze the results of the assessment with regards to achieving TMMi level 3; which development processes that testing depends upon are not yet (fully) in place?
Change management process established	Changes will fail due to not addressing change management.	High	Establish a change management process and make the activities part of the improvement plan.

Question #2
EITP-5.4.5 (K6) Create a test improvement plan
EITP-7.2.2 (K6) Create a test improvement plan considering change management issues, with appropriate steps and actions
EITP-8.2.2 (K6) Create a test improvement plan considering cultural factors

Grading Criteria:

Task 1 "Create a test improvement plan"

Maximum 28 points

- Outline a test improvement plan, identifying the major headings and describe their content.
- Identify two relevant tasks (including completion criteria) for each of four improvements to be identified.
- Note: Do not include tasks relating to the change management process or cultural issues at this stage; these will be asked for in parts 2 and 3 of the question.
- Assume that a test process group has already been set up with all the skills required.
- Clearly state any assumptions you make.

Use tables 1 and 2 to score the answer.

Aspect	Scoring	Notes
Completeness of plan	12 points 1 point for each heading included, as listed in notes with a reasonable description of the expected content. Add to a maximum of 4 points if the descriptions are related to the context of the questions.	Standard Headings: • Summary • Tasks • Priorities • Pre-conditions / dependencies • Completion criteria / performance indicators • Groups of related tasks • Organization • Approach • Schedule • Project risks
Tasks	8 points Each improvement has two tasks assigned. 1 point for each task clearly identified. Use table 2 for scoring the tasks.	• A maximum of 2 tasks shall be evaluated per improvement task • Tasks must be clearly and correctly linked to an improvement • Tasks must not relate to the fundamental change process or cultural issues
Completion	8 points Each task has reasonable completion criteria assigned. Use table 2 for scoring	• One point for each task with a clearly defined and relevant completion criteria / performance indicator

Table 1: Scoring overview for the Test Improvement Plan

The following table shows tasks based on the suggested improvements. The answers provided by candidates should be identifiable (but not literally) from those shown in the table below. Allow for other suggestions if they are well justified.

Improvement	Typical Tasks	Completion criteria
Introduce a more transparent test strategy based on risks	The organization defines a risk management process and documents this in its Test Handbook	Test strategy contains a risk management process. Steps are defined for capturing, categorizing and managing product (quality) risks
	Identify and monitor product risks	Projects identify risks at the start of a new release. Test manager regularly monitors risks and modifies the test strategy and/or test plans as required.
	Introduce a tool to manage risks	Risks are captured and managed in a tool (e.g., test management tool, requirements management tool, Excel)
	Modify the test plan templates to explicitly show the link between each risk and testing	Test plans include a list of risks and a link from the risks to the test strategy
	Modify reports to show coverage of risks by tests	Test status reports show current risks and risks covered by testing. Test completion reports include a statement of remaining risks
Increase defect detection percentage (DDP) from 60% to 85%	Continue monitoring defects to enable DDP to be calculated	DDP is calculated for all projects
	Provide test analysts with training in specification-based and/or experience-based test techniques	All test analysts who have received training can apply the techniques
	Analyze root causes for defects, e.g., during project retrospectives, and start removing them	DDP of 85% is achieved for all projects
Improve testing skills	Develop individual skills improvement plans for all staff	Improvement plans are created for all testing staff and agreed by individuals
	Provide training in testing techniques and/or test management	Testing courses provided for all staff
	Provide individual coaching/mentoring	Test coaching/mentoring provided for selected staff

Improvement	Typical Tasks	Completion criteria
Improve the accuracy of test effort estimations	The organization defines an estimation process and supporting techniques to be used. The process and techniques and reviewed by agreed to by (test) management.	Test Handbook describes the procedures and techniques to be used for test estimation
	The organization sets up a metrics database to enable more accurate estimates to be made	A database is established with testing metrics. All projects have access to the metrics database and use the data in their estimates. Accuracy of estimates is monitored and shows a 10% improvement in the first year

Table 2: Tasks and Completion Criteria Example Answer: Test Improvement Plan

Task 2: "Add steps and actions which consider change management"

Maximum 16 points

Suggest an additional task to be included in the test improvement plan for each of the four stages of the fundamental change management process.

- Briefly describe the task. Do not include tasks relating to cultural issues at this stage; these will be asked for in part 3 of the question
- Identify the stage of the fundamental change management process which this task relates to
- Describe how this task will benefit implementation of the test improvement plan

Grading Criteria:

For each of the four tasks:

- 1 point: Task is identified which relates to the fundamental change process
- 1 point: Task is well-described
- 1 point: Step in fundamental change process is correctly identified (see table below)
- 1 point: Benefit is clearly stated

Step in fundamental change process	Tasks
Set the stage	Establish the need for improvement
	Create a sense of urgency
	Establish the improvement team
Decide what to do	Establish a vision of the future
	Set specific objectives and align to business goals
	Develop the Change Vision and Strategy
Make it happen	Communicate for buy-in and understanding
	Motivate participants
	Empower others to act
	Provide lasting support

Step in fundamental change process	Tasks
	Balance short- term and longer- term benefits
Make it stick	Create a new culture of improvement
	Practice continuous improvement principles

Example Answer: Add steps and actions which consider change management

Task 1
Description: Create a sense of urgency by requesting management to hold an all-staff meeting. At the meeting, the management explains why Top-IT is losing market share to its competitors **Stage in fundamental change process:** Set the stage **Benefit:** All staff understand the urgency of introducing changes to the test process. They see that management is supporting this
Task 2
Description: Management establishes a vision of the future and presents this at the all-staff meeting **Stage in fundamental change process:** Decide what to do **Benefit:** All staff understand Top-IT's future vision of becoming a world player in financial software products and the contribution that the test process improvements will make to improving the quality of their products
Task 3
Description: Motivate staff to participate in the changes by describing what the test process will look like in the future and give them a sense of buy-in to the changes. This can be achieved by presenting the Test Improvement Plan to them once it is available. Tell them that the Top-Funds and Top-Cash projects will be used as good examples of where all projects will be **Stage in fundamental change process:** Make it happen **Benefit:** Motivation and buy-in to the changes will be easier if people affected understand the specific plans and can see a good example from their own organization
Task 4
Description: Arrange for feedback reviews after completing the pilot projects, after 3 months of starting the improvement project and at the end of the 12-month improvement plan. Enable all staff to contribute to the feedback reviews and implement any changes to the plan to further optimize the outcomes **Stage in fundamental change process:** Make it stick **Benefit:**

Practicing continuous improvement principles will give staff the opportunity to share their experiences and propose further improvements

Task 3 "Add steps and actions which consider the culture of improvement"

Maximum 6 Points

Suggest two additional tasks to be included in the test improvement plan.

- Briefly describe the task
- Describe how this task will benefit implementation of the test improvement plan

Grading Criteria:

For each of the two tasks:

- 1 point: Task is identified which relates to cultural issues, Use the notes below to guide the grading. Allow for other tasks if they are relevant to culture of improvement
- 1 point: Task is well described
- 1 point: Benefit is clearly stated

Grading notes:

- A good culture of improvement exists when:
  - A blame free environment exists where problems can be discussed
  - People are actively encouraged to suggest improvements. This includes any offshore parts of the organization
  - Testing knowledge is shared
  - Successes and "failures" are shared
- Important tasks are:
  - Getting the stakeholder backing needed for the specific measures
  - Helping to get everyone involved and informed (e.g., successes, failures, ideas)
  - Taking on the role of neutral moderator in discussions and retrospectives
  - Establishing company-wide "communities" which exchange and develop testing knowledge

Example Answer: Add steps and actions which consider cultural issues

Task 1
Description: Introduce a wiki platform which enables a community of excellence to be formed about testing. Place the emphasis on aspects which promote testing effectiveness (e.g., test techniques, etc.). Ensure that all members of the organization, including the offshore elements, are fully involved and able to participate **Benefit:** The sharing of testing knowledge is encouraged across the whole organization. This will be important when rolling out changes across all projects
Task 2

Description:
Get well-connected people involved in spreading news and information about successes and failures to the people in the organization. Be sure the people have good contacts to staff in the offshore locations

Benefit:
Involving well-connected people will enable information and news to spread quickly and give people a trusted person to whom they can talk

Question #3
EITP-5.1.2 (K6) Create a test (improvement) policy
EITP-6.3.2 (K5) Assess test professionals (e.g., potential members of a test process group / Technical Working Group) regarding their deficits of the principal soft skills needed to perform an assessment

Grading Criteria:

Question 1

Since any improvement process starts by having clear goals and expectation, the test consultant has recommended to start the improvement process by defining a test policy.

Write a test policy for the VLS Bank identifying clear headings with appropriate content (Maximum 24 points).

Provide 2 points for each heading that is correctly stated (to a maximum of 6 headings). Provide a maximum of 2 additional points per heading for a reasonable content – at least two different statements under each heading.

The following headings are expected in the test policy:

- **Overall objectives for testing (per syllabus), many test objectives are possible here**
  Examples are:
  - To confirm that the delivered software solves a business problem
  - To confirm that the software functions as specified in the requirements
  - To provide visibility regarding the quality and outstanding risks of the software product developed
  - To build confidence in the software product that has been developed
  - To reduce the level of product risk
  - To contribute to software product quality by finding defects
  - To test the product following a structured risk-based testing process
  - To maintain customer satisfaction regarding the released software products
- **Key test and quality targets. Aspects of testing and quality that are strategically important within VLS**
  Examples are (based on the information provided):
  - Security
  - Reliability (24/7)
  - Functional suitability (conformance to requirements)
  - Usability, since the front end of the channels is via the Internet
  - Performance efficiency since it is an online application. (the number of clients is not mentioned, so maybe it is not that high, but they still want good performance)

  This last two were not explicitly mentioned in the scenario as quality targets, but they are typically important for online applications. Since there is more than one channel also portability may be an issue to pay attention to
- **Testers (employees). This is something for which a sound policy statement is needed for VLS**
  Examples of policy statements for this heading are:
  - Testing is a profession
  - Career paths will become available for testers
  - Testers are trained for their job and hold a professional certificate

- **Key Test Responsibilities. Clearly for VLS this is something that needs to be clarified**
  Examples of policy statements for this heading are:
  - To manage and perform system tests
  - To provide visibility in product quality and support release decisions
  - Project structure will allow for three distinct teams: Design, Development, and Testing. These teams will be independent from each other, with independent management reporting lines
- **Test Process (per syllabus)**
  Examples of process related statements are:
  - Test planning and tracking based on product risk-analyses
  - Test design, using both formal and informal techniques
  - Test execution, defect reporting & analysis
  - Development and execution of a test plan in accordance with organizational procedures and user requirements
  - All testing activities will be carried out within the development framework methodology
  - Testing will be performed using the ISTQB fundamental test process as a basis
- **Evaluation of Test Effectiveness and Test Efficiency (per syllabus)**
  Examples of policy statements are:
  - Test effectiveness and efficiency will be an integral part of the Post Implementation Review process
  - Required data will be gathered to allow the cost of each fault found during test process to be evaluated
  - The number of live faults found within the first 3 months of live operation will be analyzed and compared to the faults found during test to gauge test effectiveness (Post-Release Defect Rate)
  - Test effectiveness will be measured using DDP
  - Test efficiency will be measured using Cost of Quality Ratio
  - Test efficiency will be measured using the Early Defect Detection ratio
  - Test efficiency will be measured by relating the number of test cases to the test effort
- **Test Improvement (per syllabus)**
  Examples of policy statements are:
  - Test improvement will be carried out using the TMMi as a reference
  - Improvement will be identified both top-down and bottom-up and will be focused on higher defect-finding effectiveness
  - At the end of next year TMMi maturity level 2 will be achieved
  - Post project reviews will be performed after each project to drive test improvements

Note that other content than the provided examples is possible.

Question 2

After the discussion on the test policy LMG has suggested to perform a test assessment to determine the status. It has been decided by management that TMMi will be used as a reference model and the assessment scope will be the process areas of TMMi levels 2 and 3. The assessment will be led by the senior consultant of LMG. To assist the lead-assessor / senior consultant a test team member of VLS Bank will be added to the assessment team.

Four candidates have been suggested to the LMG consultant.

Evaluate the description of the four test team members and select the team member as assessor who has shown the best skills and knowledge. To make the selection, use the scheme provided to evaluate each of the skills and knowledge areas for the four candidates. (maximum number of points 26)

- Score 0 if the description indicates poor skills & knowledge
- Score 1 if the description indicates good skills & knowledge
- Justify your scores

The maximum score which an assessor can achieve is 7.

Clearly state which team member is chosen to act as the assessor.

Assign 1 point for each correct evaluation per skills/knowledge per person with correct justification (maximum 24 points).

Assign and additional 2 points when the correct team member (Tim) has been selected to act as assessor.

	Erik	**Anne**	**Tim**	**Lars**
Interviewing skills	1 – Has experience and uses open questions	0 – little experience	1 – has experience and uses open questions	0 – rushing and closed questions
Presentation & Reporting skills	1 – experienced in both	0 – blunt during presentations	1 – experience in both	0 – does not like this (little experience)
Analytical skill	0 – jumps to conclusions	1 – known for great skills	1 – looks at all options	0 – implementer, like to keep things moving
Note-taking	1 – uses mind maps	0 – relies on memory	1 – uses keywords	0 – too detailed notes
Listening skills	1 – eye contact, no interruption, verification	0 – interrupting other people, always rushing	1 – active listening skills	0 – not looking in the eye, no verification
Suitability personality type for assessment	1 – brings people together, confident	0 – not a team player, not a structured worker	1 – team player, serious minded	0 – technical oriented person
Testing knowledge	0 – self-made tester	1 – test training course	1 – dedicated tester with certification	0 – limited view, test automation focused
Total Points	**5 points**	**2 points**	**7 points**	**0 points**

Based on the analyses Tim should be chosen (highest score) to act as an assessor alongside the senior consultant of LMG.