

Sample Exam
ISTQB® Expert Level
Improving the Test Process
Part 1: Assessing Test Processes
2015

Version 1.0

International Software Testing Qualifications Board



Copyright Notice

This document may be copied in its entirety, or extracts made, if the source is acknowledged.

Table of Contents

Table of Contents	2
0. Introduction	3
0.1 Purpose of this document	3
0.2 Instructions	3
1. Sample Questions.....	4
Question 1 (K2)	4
Question 2 (K2)	4
Question 3 (K2)	5
Question 4 (K2)	5
Question 5 (K2)	5
Question 6 (K2)	6
Question 7 (K2)	6
Question 8 (K2)	6
Question 9 (K2)	7
Question 10 (K3)	7
Question 11 (K3)	8
Question 12 (K3)	9
Question 13 (K3)	10
Question 14 (K2)	11
Question 15 (K2)	11
Question 16 (K3)	12
Question 17 (K4)	13
Question 18 (K2)	13
Question 19 (K2)	14
Question 20 (K3)	15
Question 21 (K3)	16
Question 22 (K2)	16
Question 23 (K2)	17
Question 24 (K4)	17
Question 25 (K2)	18
Essay Question 1	19
Essay Question 2	20
Essay Question 3	28

0. Introduction

0.1 Purpose of this document

This document contains a full sample exam for the expert level module Improving the Test Process, part 1: Assessing Test Processes, following the rules described in the ISTQB Expert Level Exam Structure and Rules document.

The sample questions, answer set (in this document) and associated justifications (in related document) 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 as well as people planning to take the ISTQB expert level Improving the Test Process, module Assessing Test Processes examination.

These questions cannot be used as-is in any official examination, but they should serve as guidance for question writers. Given the wide variety of formats and subjects, these sample questions should offer many ideas for the individual member boards on how to create good questions and appropriate answer sets for their examinations. Furthermore training providers can use these questions as part of their training to prepare participants for the examination.

0.2 Instructions

The question and answer sets are organized in the following way:

- Learning Objective and K-level
- Question - including any scenario followed by the question stem
- Answer Set

The correct answers including justification of the answers are documented in a separate coherent document.

1. Sample Questions

Question 1 (K2)

A business manager has discussed with you five objectives relating to his business.

Which THREE objectives from the list below are reasonable propositions for improving the testing process?

- i. Complying to the latest version of IEEE1044 as an applicable standard when documenting defects.
- ii. Improving the efficiency of software program coding
- iii. Ensuring that third party suppliers achieve TMMi Level 2
- iv. Increase sales by 10% for the next 5 years
- v. Reduce the costs incurred in fixing production failures

Answer Set:

- A. i, ii and iii
- B. ii, iv and v
- C. i, iii and v
- D. ii, iii and iv

Question 2 (K2)

The term test process improvement suggests that only the process itself needs to be improved. To have efficient and effective test improvements other aspects have to be taken into account as well.

Which of the following aspects, besides process, can be addressed during test improvement?

Answer Set:

- A. Requirements management, configuration management, project management
- B. Dynamic testing, static testing
- C. Infrastructure, organization, people issues
- D. Product risks, test project risks

1 **Question 3 (K2)**

2
3 Comparing the Plan-Do-Check-Act (PDCA) method to the IDEAL framework, which one of the
4 following statements is true?

5
6 **Answer Set:**

- 7 **A.** The PDCA method can be broadly applied, whilst the IDEAL framework focuses on test
8 process improvement specifically
9 **B.** The IDEAL framework emphasizes the management perspective and commitment, which is
10 addressed very limited in the PDCA method
11 **C.** The PDCA method does not address the evaluation of improvement steps, which is the
12 explicit last phase in the IDEAL framework (Learning)
13 **D.** Statistical methods are an important aspect in both models to detect deviations in the
14 execution and deployment of improvements.
15

16 **Question 4 (K2)**

17
18 Which one of the following approaches will give you most benefits solving the specific problem “There
19 are too many defects being found during system testing”?

20
21 **Answer Set:**

- 22 **A.** Model-based improvement approach
23 **B.** Analytical-based improvement approach
24 **C.** Hybrid improvement approach
25 **D.** An approach using STEP as test improvement model
26

27 **Question 5 (K2)**

28
29 Which of the following statements is NOT true regarding improvement of the test process by using
30 tools?

- 31
32 1. Test tools are implemented with the intention of increasing test efficiency
33 2. Test tools can be used by improvement groups because they can support measuring improvement
34 initiatives.
35 3. Test tools are used by test teams to ensure conformity to testing processes.
36 4. The test tool implementation process should be controlled by improvement groups to reduce
37 problems in piloting.
38 5. Improvement activities are always dependent on supporting test tools.
39

40 **Answer Set:**

- 41 **A.** Only 1, 3 and 4 are true, 2 and 5 are false
42 **B.** Only 2, 4 and 5 are true, 1 and 3 are false
43 **C.** 1, 2, 3 and 4 are true, 5 is false
44 **D.** Only 1, 2 and 3 are true, 4 and 5 are false
45

1 **Question 6 (K2)**

2
3 Which one of the following is a main reason why using iterative life cycles can be very effective for test
4 improvement?

5
6 **Answer Set:**

- 7 **A.** At the end of each iteration and retrospective is held in which test improvements can be
8 identified for the next iteration
9 **B.** Tools are used that have make the test process more efficient
10 **C.** Iteration life cycle typically use standards that provide a framework for testing
11 **D.** Unit testing is core in iterative life cycles making testing much more efficient and effective
12

13 **Question 7 (K2)**

14
15 Which one of the following is a typical advantage of using model-based approaches?
16

17 **Answer Set:**

- 18 **A.** They provide a mechanism to identify root causes
19 **B.** The model can be followed without any further discussion; the improvement process to be
20 followed is clearly specified
21 **C.** You will benefit from the proposed set of best practices in testing, as proposed by the model's
22 developers
23 **D.** They always include setting of specific improvement goals and metrics
24

25 **Question 8 (K2)**

26
27 Which one of the following statements is correct regarding the TPI Next improvement model?
28

29 **Answer Set:**

- 30 **A.** TPI Next groups different processes on different stages together so that a detailed path to
31 follow is provided for the test improvement team. The maturity of any process can therefore
32 only be achieved on a specific level
33 **B.** In a TPI Next assessment each key area is rated in three categories: Planning, Acquisition
34 and Measurement. This is done using a maturity scale to define gaps according to the model's
35 definition of key areas
36 **C.** TPI Next uses generic and specific goals to identify the maturity of testing processes and to
37 improve them
38 **D.** Maturity levels can be determined for each key area in TPI Next. An overall maturity to the
39 test processes of the assessed organizational unit can also be determined
40

1 **Question 9 (K2)**

2
3 A small bank is about to start a test improvement program. For the current year the aim is to become
4 more effective in testing and to achieve TMMi level 2. Which of the following process areas will be
5 within the scope of the test improvement program?
6

7 **Answer Set:**

- 8 **A.** Test Organization
- 9 **B.** Non-Functional Testing
- 10 **C.** Test Design and Execution
- 11 **D.** Test Measurement

12
13 **Question 10 (K3)**

14
15 You are a test manager of a multi-year software development project, creating a financial records
16 information system for a large car dealer. The lifecycle model used V-model and you have a 5-person
17 test team at your disposal After first month of trying to get test design running without success, you
18 decided to conduct an informal test process assessment on your own. You suspect that there is some
19 room for improvement in the process of how your team does the test design – it is not only a matter of
20 using more effort on the large task.
21

22 You have chosen the TPI Next model as the improvement model to use. How will you use it for the
23 problem described above?
24

25 **Answer Set:**

- 26 **A.** You only assess the test design techniques key area, as you have problems in that area
- 27 **B.** You follow the checkpoints from the test design techniques key area built within the model to
28 implement test design techniques
- 29 **C.** You conduct an assessment on all key areas and maturity levels within the model
- 30 **D.** You prioritize and assess the test design technique key area, but also assess all key areas for
31 supporting improvements

1 **Question 11 (K3)**

2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27

You are hired as an external consultant by the IT department of a large bank to guide and perform an low costs informal assessment on the test process on a project for electronic banking.

There are too many disturbances in productions, which decreases the trust of the customers in the product. A team, with five testers and a test leader, are testing the application. You have been appointed to use the TPI Next assessment model to assess the test maturity of the testing of the e-banking project.

Which approach will you take for this informal test process assessment regarding the team working on the electronic banking program?

Answer Set:

- A. You will interview not only test team members, but also other project members and stakeholders and assess all test ware of the last two releases. You will assess and score all key areas of the TPI Next model.
- B. Based on business drivers the most important key areas will be assessed and scored, test ware is studied thoroughly, and also stakeholders outside the test team will be interviewed.
- C. Using interviews with several team members and other IT roles outside testing, you will assess at least the key areas related to test strategy, organization, defect management and test case design based on the business-driven perspective (including the associated clusters). Based on the interviews and a document study all relevant checkpoint will be scored by you. The scores will be reviewed by the interviewees.
- D. Members of the team will fill in the scores of the key areas and checkpoints based on their role during the project. Only the key areas directly related to the business problem stated will be assessed. Based on the scores improvements will be identified and proposed.

Question 12 (K3)

You have just conducted an informal test process improvement interview with a test manager which focussed on the TMMi process area “Test policy and Strategy”.

The following notes were taken:

- The test team performs a workshop with all stakeholders to discuss product risks. The test manager uses this for identifying areas which need more testing.
- The test manager talks regularly to the business owners to define and update testing goals and objectives. The test manager then defines the test policy and explains it to the test team. Achievement of the testing goals and objectives is not measured.
- A test strategy is established which describes the different test levels to be performed.
- The test manager first explains the test strategy to the test team and then presents it to the stakeholders.

Use the following TMMi checkpoints, derived from the specific practices, to assess the achievement of specific goals in process area 2.1 “Test Policy and Strategy”,

Specific Goal 1 Establish a test policy

Specific Practice (SP)	Description	Your notes
SP1.1	Define and maintain test goals based on business needs and objectives	
SP1.2	A test policy, aligned with the business (quality) policy is defined based on the test goals and agreed upon by the stakeholders	
SP1.3	The test policy and test goals are presented and explained to stakeholders inside and outside of testing	

Specific Goal 2 Establish a test strategy

Specific Practice (SP)	Description	Your notes
SP2.1	A generic product risk assessment is performed to identify the critical areas for testing	
SP2.2	A test strategy is defined that identifies and defines the test levels.	
SP2.3	The test strategy is presented and discussed with the stakeholders inside and outside of testing	

1 Specific Goal 3 Establish test performance indicators

2

Specific Practice (SP)	Description	Your notes
SP3.1	The test performance indicators are defined based on the test policy and goals including a procedure for data collection, storage and analysis	
SP3.2	Deploy the test performance indicators and provide measurement results addressing the identified test performance indicators to stakeholders	

3

4 Assess each Specific Goal (SG) and determine whether it has been fully, partially, largely or not
5 achieved.

6

7 Which of the following assessment results is correct?

8

9 **Answer Set:**

- 10 **A.** SG1: Partly Achieved, SG2: Fully Achieved, SG3: Not Achieved
- 11 **B.** SG1: Fully Achieved, SG2: Partly Achieved, SG3: Partly Achieved
- 12 **C.** SG1: Partly Achieved, SG2: Largely Achieved, SG3: Not Achieved
- 13 **D.** SG1: Largely Achieved, SG2: Fully Achieved, SG3: Partly Achieved

14

15 **Question 13 (K3)**

16

17 You have been approached by a small local bank to do a TMMi assessment. Since they believe they
18 are far from achieving a TMMi level, they have you asked to do a TMMi level 2 quick scan only to
19 identify opportunities for improvement. In line with the assignment, you have spent three days in the
20 bank using only interviews to gather evidence. You have now done the analysis and some scoring for
21 the various process areas.

22

23 The informal TMMi assessment for the bank resulted in the following scores for the various level 2
24 process areas:

- 25 - Test Policy and Strategy : Partly Achieved
- 26 - Test Planning : Fully Achieved
- 27 - Test Monitoring and Control ; Fully Achieved
- 28 - Test Design and Execution : Largely Achieved
- 29 - Test Environment : Not Applicable

30

31 What is the overall rating you would provide to the bank for TMMi level 2 “Managed”?

32

33 **Answer Set:**

- 34 **A.** Not Achieved
- 35 **B.** Partly Achieved
- 36 **C.** Largely Achieved
- 37 **D.** Not Applicable

38

1 **Question 14 (K2)**

2
3 According to the STEP improvement model, which one of the roles listed below typically performs the
4 following activities:

- 5 - detailed planning
- 6 - list test objectives
- 7 - test analysis
- 8 - test design and specification?

9
10 **Answer Set:**

- 11 **A.** Senior Test Designer
- 12 **B.** Test Analyst
- 13 **C.** Test Manager
- 14 **D.** Tester

15
16 **Question 15 (K2)**

17
18 The test manager has decided to use casual analysis as part of the inspection process in your current
19 project. The casual analysis has been split into two parts: Defect analysis and Generic analysis.

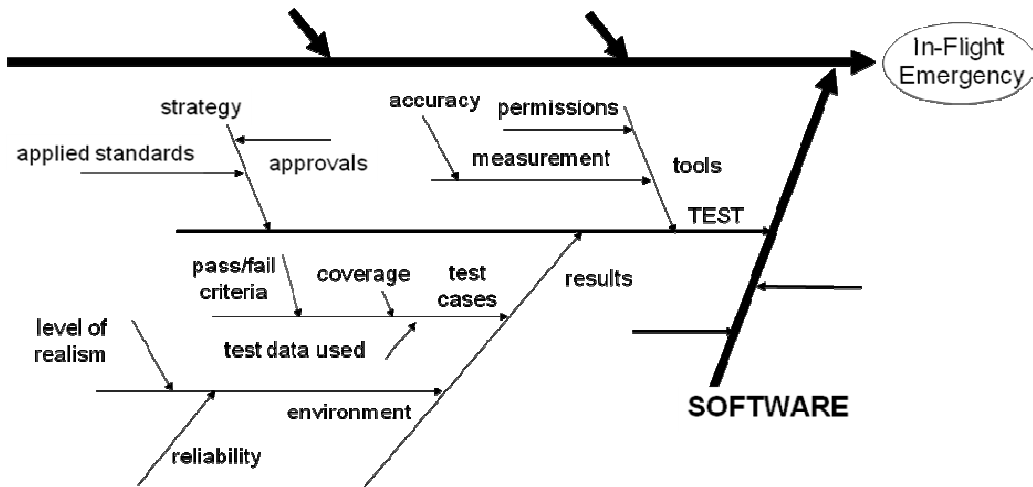
20
21 What is typically done in each of these two parts?

22
23 **Answer Set:**

- 24 **A.** Defect analysis: Analyze defects with high severity; Generic analysis: Analyze the generic test
25 procedures for improvement
- 26 **B.** Defect analysis: Look for specific defects with certain patterns; Generic analysis: Identify
27 trends in the number of test cases causing defects
- 28 **C.** Defect analysis: Analyze group of defects, e.g., with similar failures; Generic analysis: Identify
29 root causes for those defects
- 30 **D.** Defect analysis: Analyze which tests have exposed the defects; Generic analysis: Identify
31 generic trends in defect finding

1 **Question 16 (K3)**

2
3 An in-flight emergency has occurred during the trials for a new aircraft. A standard cause-effect
4 diagram for investigating such incidents has been prepared. The aspects relating to software testing
5 are shown in the diagram.
6



7
8
9
10 An initial investigation provided the following information:

- 11 • Input test data have been updated for the specific flight characteristics of the aircraft
- 12 • A production copy of the hardware and software is used for the tests
- 13 • Company has just passed an audit which verified standards conformity and full compliance
- 14 with the targets set for requirements coverage of test cases.
- 15 • Test results are recorded by a tool which has been certified as providing accurate data.
- 16 • The pass / fail criteria used in the test cases are based on previous flight trials for similar
- 17 aircraft
- 18 • All tests passed

19
20 Based on this information, you have been asked to select the next activity to be investigated, based on
21 your initial assessment of the most likely cause for the incident. Which of the following would you
22 primarily select?

23
24 **Answer Set:**

- 25 **A.** Investigating the accuracy of the test data
- 26 **B.** investigating whether tests are being passed which should have failed
- 27 **C.** Investigating the procedures used for the audits
- 28 **D.** Investigating configuration management procedures used for the test environment

Question 17 (K4)

An online bookstore is having increasingly production problems since the last release with a new ordering process being one of its most important feature. The system is becoming unstable and data seems to be lost during evening hours, which results in dissatisfied customers complaining about not receiving their ordered books. In addition a number of user unfriendly messages keep appearing on the screens of the on-line bookstore. One customer complained that he was not able to find the book he required book at the on-line bookstore. During testing there were several problems with the test environment not being stable.

IT management responsible for the on-line bookstore organized a retrospective session with the test team to identify production defects that needed to be looked at more in detail. The team uses Ishikawa / fishbone diagrams to understand the defects and have some ideas about the most likely causes for the various defects. The defects are also categorized by impact and frequency.

During system testing, the team had focussed on functionality of the order process and on the user interface based on their risk assessment with the stakeholders. The team achieved a good coverage on functionality and usability and defects found were solved in a reasonable time-frame. The team had a test environment, although not completely stable, with test tools available for system testing and followed a structured test process called TMap.

Which of the defects listed below should be selected for a detailed root cause analysis?

Answer Set:

- A. User unfriendly messages
- B. Test environment problems
- C. Unstable production system and loss of data
- D. Compliant regarding book not being found

Question 18 (K2)

Which of the following set of metrics are suitable for monitoring improvements on test efficiency?

Answer Set:

- A. Early Defect Detection, Automation level
- B. Test Productivity, Post-release Defect Rate
- C. Early Defect Detection, Defect Detection Percentage
- D. Defect Detection Percentage, Early Defect Detection

1 **Question 19 (K2)**

2
3 In the context of a GQM based measurement program, a kick-off session is organized at the beginning
4 of the data collection phase.

5
6 Which of the following topics is most likely to be part of the agenda of this kick-off session?

7
8 **Answer Set:**

- 9 **A.** Testing data collection procedures and forms
10 **B.** Repeating and explaining goals and questions
11 **C.** Interpreting measurements
12 **D.** Answering the GQM questions
13

Question 20 (K3)

An insurance company has a dedicated testing team consisting of a small number of core testers that maintain and lead testing projects as part of the internally run software projects. They write and execute tests together with non-professional testers from the different departments that will later use the new or changed products. The testing team has defined the following measurement goal to improve their testing processes:

- Analyze** all test cases in the test case-database
- For the purpose of** understanding
- With respect to** reusability
- From the viewpoint of** the core testing team
- In the context of** starting new testing projects

The following questions and metrics were proposed by the testing team members. Which of these should best be used in the GQM plan to fulfill the given goal?

- Q.1 "Is it better to rework and then reuse test cases or to write them from scratch?"
- Q.2 "How much time and money is spent on reworking test cases?"
- Q.3 "What can we do to improve reusability?"
- Q.4 "How many test cases must be archived and can never be reused again?"
- Q.5 "Who is better at writing effective test cases – the core team testers or the non-professional-testers?"
- Q.6 "Which kinds of projects produce which grade of reusability?"
- Q.7 "Which training do non-professional testers need to write better test cases?"
- M.01 Number of reused test cases (#)
- M.02 Time spent writing new test cases (hours)
- M.03 Time spent reworking test cases (hours)
- M.04 Group test case author belongs to ([core, dept])
- M.05 Money spent reworking test cases ([\\$])
- M.06 Number of outliers in reusability chart
- M.07 Percentage of test cases that has been reworked ([0%, 20%, 50%, 80%, 100%])
- M.08 Part of test case that has been reworked ([administrative data, input values, preconditions, test steps, expected results])
- M.09 Number of changed revisions of test case (#)
- M.10 Type of project ([Class A, Class B, Class C])
- M.11 Number of rejected test cases in reviews (#)
- M.12 Root causes for non-reusable test cases

Answer Set:

- A. Q.1 – Q.7 and M.01 – M.12 as all are equally necessary
- B. Q.1, Q.2, Q4 and Q.6 with M.01-M.05, M.07-M.08, M.10 as exactly these are adherent to the given goal
- C. Q.3 is sufficient, but all M.01-M.12 answer that question
- D. Q.1, Q.5 and Q.7 are the only questions that need to be answered, M.02-M.04, M.09, M.11-M.12 answer these questions

1 **Question 21 (K3)**

2
3 An embedded software is setting up a measurement program to get visibility into the effectiveness of
4 testing. For this purpose they are using the Goal-Question-Metric (GQM) method. After analyzing the
5 goal and defining the questions, several possible metrics have been identified. One of the metrics they
6 have selected to use is level of statement coverage achieved during component testing.

7
8 As a next step in the process of defining the measurement plan, the metrics are defined in detail using
9 the following attributes:

- 10 - Formal definition of statement coverage (measurement formula)
- 11 - Short textual explanation
- 12 - A hypothesis (possible outcome)
- 13 - How the data will be collected via the coverage tool
- 14 - Point in time when the data is collected, e.g., after full completion of component testing

15 Which of the following items is most important to add to the standard list of attributes used to define
16 the metrics?

17
18 **Answer Set:**

- 19 **A.** The analysis procedure
- 20 **B.** List of stakeholders, e.g., target audience
- 21 **C.** The environment in which the data collection will take place
- 22 **D.** List of influencing factors

23
24 **Question 22 (K2)**

25
26 Which one of the following is the preferred test process improvement approach for situation defined by
27 the statement "Agreement is needed regarding the reasons for change"?

28
29 **Answer Set:**

- 30 **A.** Process-model based approach
- 31 **B.** Mixed (or Hybrid) approach
- 32 **C.** Content-model based approach
- 33 **D.** Analytic-based approach

Question 23 (K2)

Which of the following high-level activities are parts of the “Initiating” phase of the IDEAL model?

1. Set context and establish sponsorship
2. Define performance indicators
3. Identify stimulus for improvement
4. Establish an improvement infrastructure (i.e., organization)
5. Set detailed objectives and establish test improvement team commitment
6. Plan assessment
7. Define impact of improvement measures

Answer Set:

- A. Only 1, 3 and 4 are parts of the “Initiating” phase of the IDEAL model
- B. Only 1, 2 and 5 are parts of the “Initiating” phase of the IDEAL model
- C. Only 1, 2, 3, 4 and 5 are parts of the “Initiating” phase of the IDEAL model
- D. Only 1 and 3 are parts of the “Initiating” phase of the IDEAL model

Question 24 (K4)

You are a company-internal quality manager and you are currently preparing for a test improvement assessment within your company. The development manager of the software development business unit has directed you to look at one key product line of the unit and try to find testing productivity increase opportunities. He mentions that his balanced scorecard includes productivity increase goals for the upcoming year. These goals have been set by the development manager together with his business unit manager. You question him about details of the productivity increase goals and learn that the productivity increase together with emphasis on new innovative features of the product line is expected to increase profit of that product line by 20%.

How will you respond; what action will you carry out based on this information?

Answer Set:

- A. You consider changing your test improvement goals to also address innovative ways of testing, because innovation is also on your boss’s balanced scorecard, leading into the same goal. Your new testing goal would be to contribute to 10% profit increase through innovation.
- B. You analyze what portion 20% profit increase could be targeted to productivity increase and how much of that could testing productivity increase contribute to. The end result would be a quantifiable goal for testing.
- C. You analyze the balanced scorecard information to find ways to choose the right people to help you with the assessment. With right people you can influence profit targets more directly than through productivity only.
- D. You promise the development manager to make him look good by identifying and implementing improvements that will increase profit at least 30%. You ask him to team up with you to enhance the chance of even higher increase.

1 **Question 25 (K2)**

2
3 What would you typically do during a solution analysis??

4
5 **Answer Set:**

- 6 **A.** Estimate solution capability to solve common goals of organizational improvement, then make
- 7 decision to use the solution or not
- 8 **B.** Prioritize problems and root causes, identify potential solutions to problems and then choose
- 9 between those solutions
- 10 **C.** Analyze potential solutions to identify bottlenecks in their possible implementation, then
- 11 brainstorm ideas how to remove bottlenecks
- 12 **D.** Analyze the organizational situation to identify problems to be addressed in the improvement
- 13 plan, then prioritize the problems

14
15
16
17
18
19

1 Answer 2 of the following 3 essay questions.

2 **Essay Question 1**

3
4 Your business unit has decided to improve its testing practices due to some shortcomings in the
5 quality of the recent release of their product, the car navigation system. There is a demand to identify
6 improvements especially in test coverage, because the development manager has analyzed that the
7 functional area where the customer reported defects had less tests than other functional areas. Some
8 of test team members feel that test coverage is generally good and the real reasons for quality
9 shortcomings are poor architecture and design. They are not very enthusiastic about the upcoming
10 assessment and resulting improvements. Your company has already invested in CMMI level 2
11 improvements in recent years (although not yet a full CMMI level 2 company), and thus your boss now
12 thinks you can find test improvements most easily with TMMi. You accept the assignment to conduct a
13 TMMi assessment for your business unit.

14
15 **Questions**

- 16
17 1. Which TMMi process areas will you focus on and explain why? (max. 25 points)
18 (explain using the structure of TMMi and details of the relevant process areas)
19
20 2. Who will you typically interview during an assessment such as this? (max. 10 points)
21 State the reasons why you would interview persons in these roles and mention at least 5
22 different roles to be interviewed
23
24 3. List the topic(s) that you will discuss per role (max. 7 points)
25
26 4. Explain how you will motivate the interviewees in this situation. (max. 8 points)
27

Essay Question 2

In this essay question you will be asked to do the following:

1. Evaluate assessment results shown on a TPI Next Matrix and provide recommendations
2. Evaluate results from defect root-cause analysis and provide recommendations
3. Propose recommendations and conclusions based on the above information

GCF provides software applications which manage the financial strategies of global companies in the banking sector. GCF has received some negative feedback from its customers relating to its Galaxy series of products. As an initial reaction to this, the following initial activities have been conducted by an external assessment organization:

1. A test process assessment was performed to determine whether the basic aspects of testing were being performed. The assessment covered the initial two clusters A and B as defined in the TPI Next model.
2. Defects reported by the help-desk over the last 6 months were analyzed to gain insights into root causes.

The results of these two initial activities are shown below. Figure 1 shows the assessment of clusters A and B on a TPI Next Matrix. Tables 1 and 2 list the checkpoints for these two clusters.

In the context of the above, GCF has defined a number of business objectives regarding testing:

1. Improve the effectiveness of testing
2. improve transparency of testing to its stakeholders
3. Improve test management practices.

Task 1: “Recommendations based on TPI Next assessment” (maximum 20 points)

Analyze the results shown on the TPI Next matrix (Figure 1). Use Tables 1 and 2 as a reference if necessary.

Propose 5 recommendations based on the results of the TPI Next assessment. Enter your answers in Table 3. Each recommendation must clearly state:

1. what should be done, and
2. what the positive impact will be on the business objectives of CGF.

Key Area		Checkpoints (clusters A and B)			
1	Stakeholder commitment	A	B	B	
2	Degree of involvement	A	B		
3	Test strategy	A	A	B	
4	Test organization	A			
5	Communication	B			
6	Reporting	B			
7	Test process management	A	A	B	B
8	Estimating and planning	B	B		
9	Metrics				
10	Defect management	A	A	B	
11	Testware management	B	B		
12	Methodological practice				
13	Tester professionalism				
14	Test case design	A	A		
15	Test tools				
16	Test environment				

Figure 1: TPI Next Matrix for Clusters A and B in Maturity Level “Controlled”

In Figure 1, the checkpoints successfully achieved are shaded dark grey. The checkpoints not achieved are shaded light grey. All other checkpoints (including those relating to higher maturity levels) are out of scope.

Key area	CLUSTER A Checkpoint Number / Checkpoint	Your Notes
Stakeholder commitment	1. The principal stakeholder is defined (not necessarily documented) and known to the testers.	
Degree of involvement	1. The test assignment, scope and approach are negotiated early with the principal stakeholder as one of the first test activities.	
Test strategy	1. The principal stakeholder agrees with the documented test strategy.	
	2. The test strategy is based on a product risk analysis.	

Key area	CLUSTER A Checkpoint Number / Checkpoint	Your Notes
Test organization	1. People involved know where to find the persons (or department) responsible for test services.	
Reporting	1. The reporting contains aspects of time and/or costs, results and risks.	
Test process management	1. At the start of the test project a test plan is created. The test plan includes at least the test assignment, the test scope, the test planning, the roles and responsibilities.	
	2. The test plan is agreed with the principal stakeholder.	
Defect management	1. The defect lifecycle is defined (including a retest) and applied.	
	2. The following items are recorded for each defect: unique ID, related test case ID (if applicable), person reporting the defect, date, severity category, description (the actions to reproduce the defect, expected and observed result) and defect status.	
Test case design	1. The test cases are recorded on a logical level.	
	2. The test cases consist of a description of: a) initial situation, b) change process = test actions to be performed, c) predicted result.	

1
2
3

Table 1: Checkpoints for TPI Next cluster A

Key area	CLUSTER B Checkpoint Number / Checkpoint	Your notes
Stakeholder commitment	2. Budget for test resources is granted by and negotiable with the principal stakeholder.	
	3. Stakeholders actually deliver the committed resources.	
Degree of involvement	2. Test activities are started early, timely before test execution, with the goal of keeping the test activities of the project's critical path.	

Key area	CLUSTER B Checkpoint Number / Checkpoint	Your notes
Test strategy	3. There is a differentiation in test levels, test types, test coverage and test depth, depending on the analyzed risks.	
Communication	1. Every team member is aware of decisions being made and of internal progress.	
Test process management	3. Each test activity is monitored and when necessary adjustments are initiated.	
	4. The test plan is agreed with the relevant stakeholders.	
Estimating and planning	1. For test effort estimation, simple techniques are used such as ratios.	
	2. For each test activity there is an indication of the period in which it runs, the resources required and the products to be delivered. Activities to be identified are: test planning and management, defining test cases and executing test cases.	
Defect management	3. For further handling of defects the responsibilities are defined.	
Testware management	1. The test basis, the test object and all testware are identified by name and version.	
	2. Each test case is related to a test basis document in a transparent way.	

1
2
3
4

Table 2: Checkpoints for TPI Next cluster B

1 **Answer template to task 1: “Recommendations based on TPI Next assessment”**

2

3

Propose 5 recommendations based on the results of the TPI Next assessment.

4

5

Each recommendation must clearly state what should be done and what the positive impact will be on the business objectives of CGF.

6

7

Recommendation 1	Positive impact on business objective(s)
Recommendation 2	Positive impact on business objective(s)
Recommendation 3	Positive impact on business objective(s)
Recommendation 4	Positive impact on business objective(s)
Recommendation 5	Positive impact on business objective(s)

8

9

Table 3: Recommendations based on the results of the TPI Next assessment

10

11

1 **Task 2: “Defect analysis”** (maximum 10 points)

2
3 Table 4 shows defect data recorded by the help-desk over the last 6 months relating to the three most
4 common root-causes affecting the Galaxy range of products.

5
6 Products in the Galaxy range:

- 7 • Galaxy-TX: mainframe application for processing financial transactions
- 8 • Galaxy-Go: mainframe application for issuing customer account statements
- 9 • Galaxy-Self: web-based application allowing customers access to their accounts
- 10 • Galaxy-App: mobile application allowing customers mobile access to their accounts

11
12 Analyze the data shown in Table 4 and propose two improvement recommendations.

13
14 Each recommendation must clearly state:

- 15 1. what should be done, and
- 16 2. what the positive impact will be on the business objectives of CGF.

17
18 Enter your answers in Table 5.

19

Galaxy product	Galaxy-TX	Galaxy-Go	Galaxy-Self	Galaxy-App
Defects				
Number of defects	30	20	30	50
% high severity	67%	20%	0%	10%
% medium severity	17%	60%	50%	10%
% low severity	16%	20%	50%	80%
Top three root causes				
Testing not completed as planned	80%	60%	0%	10%
Poor Release-Management	10%	30%	10%	80%
Unrealistic stakeholder expectations	10%	20%	90%	10%

20
21 Table 4: Results of Root-Cause Analysis for defects affecting the Galaxy product range

22
23
24
25
26

Answer template to task 2: “Defect analysis”

Recommendation 1	Positive impact on business objective(s)

Recommendation 2	Positive impact on business objective(s)
Recommendation 3	Positive impact on business objective(s)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Table 5: Recommendations based on the results of the Root-Cause analysis

Task 3 “Summary of conclusions” (maximum 20 Points)

You are requested to present your conclusions to high-level management, who do not have a detailed technical understanding of testing. Each statement must be understandable, address company objectives, relate to the findings (TPI Next and root-cause) and must not use technical terms. It must be clear what actions management needs to take.

Make the following five summary statements:

- A summary statement on the current test process maturity
- A summary statement for each of the three business objectives which indicates how the recommended testing process improvements will provide benefit to the company. The statements should take into account your answers to tasks 1 and 2 above without repeating them literally.
- One summary statement of where to set priorities for improving the test process (identify the top 3 priorities)

Enter your answers in Table 6.

1 **Answer template to task 3: “Summary of conclusions”**
2

Current test process maturity:
Area for improvement: Business objective 1
Area for improvement: Business objective 2
Area for improvement: Business objective 3
Priorities for improving test process maturity

3
4 Table 6: Summary of conclusions
5
6

Essay Question 3

You work as a test team lead for a major Bank in their IT department. The bank has decided to update their ATM machines. The project has very tight timescales and is using an iterative development lifecycle. It is important that the project succeeds for the bank to maintain its competitive edge with other major banks. It is also vital that all existing functionality operates as before and that there is no degradation in usability and performance. The bank does not use a standard test method, but rather a number of random best practices that the test professionals learned attended training courses. Currently all development and testing takes place in house, with a limited number of contractors.

Two previous projects, one on savings application, and one on the credit card application, have not succeeded in terms of product quality. Although it's not really clear in which area the problem lies, management has decided that some test process improvement needs to take place in this project to ensure all defects are found before the application goes live. There is not a huge budget allocated for the test process improvement activities, so it needs to be very focused.

The defect data (well-documented) from previous projects is stored in a defect management system. A large percentage of the defects that are being found after release seem to be somehow related. The organization does not have a history on (test) process improvement and there is no real long term strategy in place. The major and perhaps only focus of the test improvements should be on making the ATM project successful.

Questions

1. You have been asked by management to recommend a test improvement model for the project.
 - a. Identify the two major test improvement models (2 points)
 - b. Identify 4 criteria that can be used to compare the models (4 points)
 - c. Evaluate both models against the defined criteria in the context of this project (16 points)
 - d. Make a substantiated management recommendation, which one of test improvement models is probably best to be used in this context. (3 points)
2. You have now visited a leading test conference where you listened to a presentation discussing analytical-based improvement. This was totally new to you, but seems very interesting and you've been inspired.
 - a. Identify and explain 4 reasons why an analytical-based approach could be beneficial to the bank (and ATM project). (16 points)
 - b. In case an analytical-approach is going to be used, which analytical-approach would you use and why? Also briefly explain the analytical approach that you have chosen. (5 points)
 - c. As part of the project, to justify the (small) investment and measure the effect of the activities a test process improvement indicator (metrics) needs to be identified. Which metrics would you choose and why? Also briefly explain the metric. (4 points)