
Sample Exam – Answers

ISTQB® Technical Test Analyst Syllabus

Advanced Level

Exam ID: A

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International Software Testing Qualifications Board



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Exam Working Group 2019

Document Responsibility

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

Acknowledgements

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Revision History

Version	Date	Remarks
1.3	September 17, 2018	Sample Exam – Answers Template used
1.00	October 19, 2012	Version for voting
1.01	November 23, 2012	Version for release
1.2	September 25, 2018	Split of document into Questions and Answers Randomize answer order Refactor layout on Sample Exam Template Correcting of Pick-N type questions Correcting of question #31 and #35
1.3	February 19, 2019	No changes, version incremented to match Questions part of the Sample Exam paper

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Introduction

Purpose of this document

The sample questions, answer sets and associated justifications in this document have been created by a team of Subject Matter Experts and experienced question writers with the aim of assisting ISTQB® Member Boards and Exam Boards in their question writing activities.

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

Instructions

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 (The question is contained in a separate document)
- Answer Set (The answer set is contained in the document)
- Correct answer – including justification of the answers

Answer Key

Question Number	Correct Answer	LO	K-Level	Points
1	a, b	TTA-1.3.1	K2	1
2	d	TTA-1.x.x	K2	1
3	c	TTA-2.2.1	K2	1
4	d	TTA-2.3.1	K3	1
5	d	TTA-2.4.1	K3	1
6	a	TTA-2.5.1	K3	1
7	b	TTA-2.6.1	K3	2
8	a, c	TTA-2.7.1	K2	1
9	d	TTA-2.8.1	K4	2
10	b	TTA-3.2.1	K2	2
11	d	TTA-3.x.x	?	2
12	c	TTA-3.x.x	?	3
13	b	TTA-3.x.x	K2	1
14	c	TTA-3.3.1	K3	2
15	c	TTA-4.2.1	K4	2
16	c	TTA-4.3.1	K3	1
17	a, b	TTA-4.4.1	K3	2
18	a, b	TTA-4.5.1	K3	2

Question Number	Correct Answer	LO	K-Level	Points
19	b, c	TTA-4.x.x	K2	2
20	a	TTA-4.x.x	K3	1
21	c	TTA-4.x.x	K3	1
22	c	TTA-4.x.x	K3	1
23	c	TTA-5.1.1	K2	1
24	c	TTA-5.2.1	K4	2
25	c	TTA-5.2.2	K4	2
26	a	TTA-6.1.1	K2	1
27	b	TTA-6.2.1	K2	1
28	a	TTA-6.2.2	K2	1
29	d	TTA-6.2.3	K2	1
30	c, d	TTA-6.2.4	K2	1
31	c	TTA-6.3.1	K2	1
32	b	TTA-6.3.2	K2	1
33	d, e	TTA-6.3.3	K2	1
34	a	TTA-6.3.4	K2	1
35	c	TTA-6.3.5	K2	1

Answers

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
1.	a, b	a) Correct: per the syllabus. b) Correct: per the syllabus. c) Incorrect: accuracy of the computations is a concern for the TA, not the TTA. d) Incorrect: budgetary issues should be handled by the TM, not the TTA. e) Incorrect: high change rates in business use cases affect the functionality testing.	TTA-1.3.1	K2	1
2.	d	a) Incorrect: the TA would be expected to work with this group of people. b) Incorrect: the TA would be expected to work with this group of people. c) Incorrect: the TA would be expected to work with this group of people. d) Correct: per the syllabus. The TTA is expected to work with the technical people on the project, including developers.	TTA-1.x.x	K2	1
3.	c	a) Incorrect: the resulting decision is not necessarily tested for both outcomes. b) Incorrect: the atomic conditions are evaluated, not the result. c) Correct: per the syllabus. Condition testing cares about testing the atomic conditions, but not the result of the combination of those conditions. d) Incorrect: there are cases where condition coverage will miss test scenarios that would be covered by decision coverage.	TTA-2.2.1	K2	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
4.	d	a) Incorrect: either of these would result in missing one of the tests for the different atomic values. b) Incorrect: this is not the minimum number of tests. c) Incorrect: misses the decision outcome of true. d) Correct: per the syllabus. These two sets test both the atomic values (condition) and result values (decision).	TTA-2.3.1	K3	1
5.	d	a) Incorrect: covers the outcomes but not the atomic conditions that affect the decision outcome. b) Incorrect: does not sufficiently cover the atomic conditions affecting the decision outcome. c) Incorrect: does not sufficiently cover the atomic conditions affecting the decision outcome. d) Correct: this answer provides the following: (T or F) + T (T or F) + F (F or T) + T (F or F) + T This tests all values for the atomic conditions as well as all outcomes with the minimum number of tests.	TTA-2.4.1	K3	1
6.	a	a) Correct: multiple condition testing requires testing the entire truth table (all combinations of true and false possible). This requires all conditions provided above to be tested. b) Incorrect c) Incorrect d) Incorrect	TTA-2.5.1	K3	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
7.	b	a) Incorrect: 3 and 5 results in the same path. b) Correct: path coverage requires that the statement evaluates to true and to false. 2 will give you False and 3 will give you True. c) Incorrect: 1 and 3 results in the same path. d) Incorrect: only tests the TRUE, not the FALSE	TTA-2.6.1	K3	2
8.	a, c	a) Correct: this is listed under types of defects found in the syllabus. b) Incorrect: this is targeted by maintainability testing. c) Correct: this is listed under types of defects found in the syllabus. d) Incorrect: this is not listed in the targeted types of defects in the syllabus. e) Incorrect: this is not listed in the targeted types of defects in the syllabus.	TTA-2.7.1	K2	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
9.	d	<p>a) Incorrect: this is the same as simple MC/DC as branch coverage is subsumed by MC/DC.</p> <p>b) Incorrect: this is the same as branch coverage as statement coverage is subsumed by branch coverage. Branch coverage, however, provides a lower level of rigor than MC/DC or multiple condition coverage.</p> <p>c) Incorrect: MC/DC is required by the two standards in the syllabus for the highest-level criticality software, but this scenario requires this level of testing to exceed this, so this is not a correct option.</p> <p>d) Correct: MC/DC is required by the two example standards in the syllabus for the highest-level criticality software, which this presumably is as several thousand spectators could be killed/injured. Multiple condition coverage provides a higher level of coverage than MC/DC and as this 'exceeds' that provided by MC/DC this is the correct option given the scenario.</p>	TTA-2.8.1	K4	2
10.	b	<p>a) Incorrect</p> <p>b) Correct: the decision at line 10 will always be true as var1 will always be 5 at line 10, thus line 13 is unreachable. The loop at line 5 can only be left if var2 is 10 or more, but each time through the loop var2 is reset at line 7 back to 4 and only incremented by 1 in the loop at line 15, so it only ever reaches 5.</p> <p>c) Incorrect</p> <p>d) Incorrect</p>	TTA-3.2.1	K2	2

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
11.	d	<pre> 1. program Calculate Commission 2. total, number : integer 3. commission_hi, commission_lo, : real 4. begin 5. read (number) number (d) 6. while number ≠ -1 loop number (u) 7. total = total + number total (u, d); number (u) 8. read (number) number (d) 9. endloop 10. if total > 1000 then total (u) 11. commission_hi = 100 + 0.2 * (total – 1000) commission_hi (d) 12. else 13. commission_lo = 0.15 * total commission_lo (d); total (u) 14. endif 15. write ("This salesman's commission is:") 16. write (commission_hi) commission_hi (u) 17. end program Calculate Commission </pre> <p>a) Incorrect b) Incorrect c) Incorrect d) Correct:</p> <p>Anomalies: total: used at line 6 before it is defined. commission_lo: defined at line 12 & no subsequent use commission_hi: used at line 15 but may be no definition if line 12 subpath followed instead of line 10 subpath.</p>	TTA-3.x.x	K?	2

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
12.	c	a) Incorrect b) Incorrect c) Correct: CC of 10 or over suggests this is worth addressing. CH of Low suggests this is worth addressing. CP of High suggests this is worth addressing. CO of 10% or less suggests this is worth addressing. RE of 9 or more suggests this is worth addressing. d) Incorrect	TTA-3.x.x	K?	3
13.	b	a) Incorrect: this is a use of call graphs, but is used for unit testing, not integration testing per the syllabus. b) Correct: per the syllabus. c) Incorrect: determining conditional and unconditional calls can be used for integration but using them for performance analysis has nothing to do with integration. d) Incorrect: call graphs don't detect memory leaks or possible areas for memory leaks.	TTA-3.x.x	K2	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
14.	c	<p>a) Incorrect: dynamic analysis is not typically used for measuring response times (it requires instrumentation and so makes response time measurement impractical), but instead provides lower level performance metrics - these can be used for performance tuning.</p> <p>b) Incorrect: call graphs are generated by static analysis.</p> <p>c) Correct: dynamic analysis can identify memory access violations caused by a wild pointer and these could be causing the 'occasional' crashes.</p> <p>d) Incorrect: the scenario tells us that automated garbage collection was used, so it is unlikely programmers will need to release memory. May also be because memory leaks usually cause performance degradation and ultimately out-of-resource errors from the OS side.</p>	TTA-3.3.1	K3	2
15.	c	<p>a) Incorrect: because, while subsequent releases of this system may be tested with real customer data, this is a new system and existing customer data is not available.</p> <p>b) Incorrect: because there's no indication this is a distributed system.</p> <p>c) Correct: the bank is likely required by regulation to encrypt the customer financial data, which has testing implications.</p> <p>d) Incorrect: because it's not clear whether this system will be used in-house (thus a production environment might be available) or sold to customers (thus production environments would likely not be available).</p>	TTA-4.2.1	K4	2

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
16.	c	a) Incorrect: we have no information that this system is browser based or what the file is to be used for. b) Incorrect: DOS attacks work through computer interfaces, not user interfaces. c) Correct: the free-form nature of the input field allows the attackers to try to insert large, malicious inputs. d) Incorrect: we have no indication that any encryption is involved.	TTA-4.3.1	K3	1
17.	a, b	a) Correct: the test environment must mimic production and be available for an extended period. b) Correct: the marketing wants an MTBF of three months, and we have only three months left on the schedule with development just starting. c) Incorrect: you will use the ultimate production hosting environment—cloud resources—to create a production-like environment at will, and this is already a solved problem. d) Incorrect: the target availability is a given in the scenario, provided by marketing in terms of mean time between failure and mean time to repair. e) Incorrect: it does not relate to testing prior to release.	TTA-4.4.1	K3	2

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
18.	a, b	<p>a) Correct: you need to make an educated guess about the number of users, the type of programs companies will end up having, the type and frequency of actions companies and customers will do, etc.</p> <p>b) Correct: the marketing has only said they want a "very fast" system, and it's not clear what that will mean in practice.</p> <p>c) Incorrect: the system uses standard web interfaces.</p> <p>d) Incorrect: you can use the ultimate production hosting environment—cloud resources—to create a production-like environment at will.</p> <p>e) Incorrect: there is no need for any simulator in this situation, just simulated users via a standard performance testing tool.</p>	TTA-4.5.1	K3	2
19.	b, c	<p>a) Incorrect: recoverability testing is not suggested by the scenario, in which recovery from software or hardware failures would not be expected during operation (i.e. on a single journey).</p> <p>b) Correct: maintainability is important given the need for continuous development and multiple configurations.</p> <p>c) Correct: adaptability testing is likely to be important because the system will be installed in a variety of environments.</p> <p>d) Incorrect: replaceability testing is not suggested by the scenario; there is no suggestion of component replacement.</p> <p>e) Incorrect: security is not a particular issue in this scenario.</p>	TTA-4.x.x	K2	2
20.	a	<p>a) Correct: fault-tolerance testing is part of reliability.</p> <p>b) Incorrect: we are not worried about response time, throughput, or resource utilization here.</p> <p>c) Incorrect: this risk does not relate to usability.</p> <p>d) Incorrect: the specific type of network is not in question here.</p>	TTA-4.x.x	K3	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
21.	c	a) Incorrect: for the same reason that A is correct. b) Incorrect: is impossible because code reviews are static tests. c) Correct: we need to address important risks early as possible. d) Incorrect: we don't have any information on the relative risk of reliability.	TTA-4.x.x	K3	1
22.	c	a) Incorrect: is a usability failure, not a security defect. b) Incorrect: is a security feature, not a defect. c) Correct: a typical security defect. d) Incorrect: if it is a defect at all, is a portability defect.	TTA-4.x.x	K3	1
23.	c	a) Incorrect: this response indicates a willingness to co-operate in getting the review done but the analyst will be unable to make a full contribution without preparation and the review would therefore be less effective than it should be. b) Incorrect: this response flags up the lack of preparation time but does not insist on allowing time for adequate preparation. c) Correct. d) Incorrect: this response is accurate, but preparation would remove the obstacle. This is therefore not the best response when declining to attend a review.	TTA-5.1.1	K2	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
24.	c	a) Incorrect: data caching helps performance, not memory use. b) Incorrect: transaction concurrency uses more memory. c) Correct: this would reduce unnecessary memory use but does have the possible problem of the delayed performance when the class is needed. d) Incorrect: connection pooling can help memory and performance, but the possible problem is in running out of connections, not in losing a process.	TTA-5.2.1	K4	2
25.	c	a) Incorrect: the comment is correct. b) Incorrect: we have no way of knowing if there is an external library available. c) Correct: it is most likely the card will be Visa or MC so that check should be exercised first. d) Incorrect: the else handles all conditions not met by the if.	TTA-5.2.2	K4	2
26.	a	a) Correct: this can be a source of inefficiency and/or risk. b) Incorrect: it has nothing to do with the existing tools. c) Incorrect: the real issue is avoiding such duplicates, not removing them. d) Incorrect: this does not guarantee successful integration.	TTA-6.1.1	K2	1
27.	b	a) Incorrect: test data is normally the responsibility of the test analysts or business analysts. b) Correct: in syllabus. c) Incorrect: defining the keywords is normally done by the test analysts or business analysts. d) Incorrect: who performs test analysis and design (even of automated test cases) is not decided by the TTA. e) Correct: in syllabus.	TTA-6.2.1	K2	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
28.	a	a) Correct: keyword-driven tests are data-driven, too, but also have process-based keywords. b) Incorrect: because it's backwards. c) Incorrect: keyword-driven tests are easier to maintain (due to the separation of roles). d) Incorrect: because of the difficult in defining the correct architecture for the keyword-driven framework.	TTA-6.2.2	K2	1
29.	d	a) Incorrect: elimination of duplication is a positive for a toolset. b) Incorrect: ideally data should be exchanged with no manual intervention. c) Incorrect: using an IDE is often worthwhile as long as tools 'fit' the IDE. d) Correct: in syllabus.	TTA-6.2.3	K2	1
30.	c, d	a) Incorrect: because the keywords are supposed to be about the business process supported by the application, not the test process. b) Incorrect: because the keywords are supposed to be about the business process supported by the application, not the test process. c) Correct: because it is explicitly mentioned in the scenario as being capabilities of the application. d) Correct: because it is explicitly mentioned in the scenario as being capabilities of the application. e) Incorrect: might be a capability of the application, but it's not mentioned in the scenario, so it's not the most likely keyword on the list, and also because there was no mention that the product charges its customers.	TTA-6.2.4	K2	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
31.	c	a) Incorrect: Input checking can be done by mutating test inputs, but to test input checking the inputs would need to be mutated. b) Incorrect: According to syllabus 6.3.1, 2nd paragraph, this is the task of the fault injection tools. c) Correct: According to syllabus 6.3.1, 1st paragraph, this is the task of the fault seeding tools. d) Incorrect: According to syllabus 6.3.1, 3rd paragraph, these tools are generally used by the Technical Test Analyst.	TTA-6.3.1	K2	1
32.	b	a) Incorrect: driving through the user interface would normally provide more accurate results than at the communications protocol level. b) Correct: in syllabus. c) Incorrect: the script needs to be changed to take account of variability of different users and their transactions. d) Incorrect: measurements need to be taken during execution.	TTA-6.3.2	K2	1
33.	d, e	a) Incorrect: describes an MBT tool. b) Incorrect: describes a debugger. c) Incorrect: describes a fault seeding tool. d) Correct: in syllabus. e) Correct: in syllabus.	TTA-6.3.3	K2	1
34.	a	a) Correct. b) Incorrect: MBT tools actually decrease the possible paths. c) Incorrect: MBT tools provide a different view to supplement functional testing. d) Incorrect: the MBT tool 'engine' does enable some execution threads to be saved (typically those related to failed test cases).	TTA-6.3.4	K2	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
35.	c	<p>a) Correct: (is false) The statement about the xUnit framework is incorrect, it only supports the programmer when automating: „Such a framework generates test objects for each class that is created, thus simplifying the tasks that the programmer needs to do when automating the component testing." (6.3.5, second paragraph, last sentence)..</p> <p>b) Incorrect: (is true) The statement about component test tools is true - as in a), especially with Java (6.3.5, second paragraph). The statement about build automation tools is correct cf. 6.3.5, 4th paragraph: „Build automation tools often allow a new build to be automatically triggered any time a component is changed."</p> <p>c) Incorrect: (is true) 6.3.5, 2nd paragraph: "...special test tools; these are collectively called xUnit frameworks. Such a framework generates test objects for each class that is created, thus simplifying the tasks that the programmer needs to do when automating the component testing. 4th paragraph: "Build automation tools often allow a new build to be automatically triggered any time a component is changed."</p> <p>d) Incorrect: (is true) The statement about component test tools is correct (see a) and b)). The statement about build automation tools is also correct (see justification for b)).</p>	TTA-6.3.5	K2	1

Question	Correct Answer	Explanation / Rationale	Learning Objective (LO)	K-level	Number of Points
35.	C	<p>a) Incorrect: is True. 6.3.5, 2nd paragraph: "...special test tools; these are collectively called xUnit frameworks. Such a framework generates test objects for each class that is created, thus simplifying the tasks that the programmer needs to do when automating the component testing. 4th paragraph: "Build automation tools often allow a new build to be automatically triggered any time a component is changed."</p> <p>b) Incorrect: is True. The statement about component test tools is true - as in a), especially with Java (6.3.5, second paragraph). The statement about build automation tools is correct cf. 6.3.5, 4th paragraph: "Build automation tools often allow a new build to be automatically triggered any time a component is changed."</p> <p>c) Correct: is False. The statement about the xUnit framework is incorrect, it only supports the programmer when automating: "Such a framework generates test objects for each class that is created, thus simplifying the tasks that the programmer needs to do when automating the component testing." (6.3.5, second paragraph, last sentence).</p> <p>d) Incorrect: is True. The statement about component test tools is correct. The statement about build automation tools is also correct.</p>	TTA-6.3.5	K2	1