



**AT\*SQA**

**Testing Essentials**

**AT\*Essentials**

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**SAMPLE EXAM  
ANSWERS**

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Version 2019

**AT\*SQA**

ASSOCIATION FOR TESTING &  
SOFTWARE QUALITY ASSURANCE  
*Global Certification Body for ISTQB and ASTQB*

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# AT\*SQA Essentials of Software Testing — Sample Exam Answer Key

65 possible points. 43 required to pass (65%).

| Question | Answer | Rationale   | Learning Objective (LO) | Number of Points |
|----------|--------|---|-------------------------|------------------|
| 1        | B      | B is correct. It can be considered fit for purpose if all the users will always use it in the tested environment.   | LO-1.1.b                | 1                |
| 2        | A      | A is correct. Test analysts are the most likely folks to work with the users during UAT.  | LO-1.2.a                | 1                |
| 3        | A      | A is correct. A developer is also a tester when they are writing and executing unit tests. B, C and D are not correct because they are still acting as a developer rather than a tester.  | LO-1.4.a                | 1                |
| 4        | B      | B is correct. This is one of the purposes of a test plan. A is the description of a test strategy. C is the description of a test condition. D is the description of a test case.   | LO-1.3.a                | 1                |
| 5        | C      | C is correct. User stories are usually used in an Agile SDLC. A is not an SDLC. B is not correct as these are more likely to use formal requirements documents. D is not correct because this is not a recognized SDLC.                                 | LO-1.1.a                | 1                |
| 6        | A      | A is correct. With a project that must pass regulatory commission requirements, the documentation will be critical to its acceptance. All the others are factors, but not as important as having the appropriate documentation to present for approval. | LO-2.1.a                | 1                |
| 7        | D      | D is correct. A mature team with good skills can make any testing approach work and are not dependent on particular documentation or lifecycle guidelines to be successful.   | LO-2.8.a                | 1                |
| 8        | B      | B is correct. OAT is conducted by system operators who will be responsible for the software running on the production systems. A is not   | LO-2.2.b                | 1                |

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|          |        | correct as these testers will do the system testing. C is not correct as these folks will be involved in UAT. D is not correct as these are beta testers.  |                         |                  |
| 9        | B      | B is correct. Getting early feedback from users or potential users is possible with an iterative environment because they see the product as it is being developed. A is not correct as this is a characteristic of the sequential models. C is true, but it is a disadvantage because of the time and skill requirements rather than an advantage. D is characteristic of a sequential model where there is time with stable requirements before the testers receive the software.  | LO-2.3.a                | 1                |
| 10       | C      | C is correct. In this case there is not a lot of information for the input and there is no requirement for detailed test documentation, so C is the best answer. A is not a good approach because it will tend to move the responsibility for requirements documentation to the testers. B is not correct unless a complete UAT will be conducted and the testers are required to supply that documentation. Usually process documents are more suitable as the guideline for UAT. D is not correct because the completed code can always serve as a basis for test cases.   | LO-2.5.a                | 1                |
| 11       | C      | C is correct. In this case, you need to save time and money and the only way to do that is to test earlier and help to ensure better quality sooner. Sharing the environment with development is only possible if testing is occurring at the same rate as the development as each release will need to be tested as soon as it is available. This is a challenging, but very real situation. A is not correct because sequential will be slower and more expensive in the long run. B is not correct because eliminating UAT could result in a product that meets the requirements but is not fit for purpose for the users. C is not correct because this would result in the majority of defects being found in UAT which will be the most expensive and most time consuming approach of all. | LO-2.7.a                | 1                |
| 12       | A      | A is correct. Decision tables are best suited for looking at combinations of conditions and verifying  | LO-3.3.b                | 1                |

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|          |        | that the combinations are handled properly by the software. D is not correct because these combinations should not interact, so there is no concept of handling combinations correctly as the combination shouldn't matter.  |                         |                  |
| 13       | C      | C is correct. This is an example of when exploratory testing would be most efficient and would give the quickest feedback.   | LO-3.7.a                | 1                |
| 14       | D      | D is correct. There should be an exposed API that will allow you to test the database interactions without having to test through the UI.  | LO-3.6.a                | 1                |
| 15       | A      | A is correct. Usability can be assessed with exploratory sessions, particularly regarding navigation and clarity of instructions/prompts. B must be tested in a controlled environment over a prescribed period of time. C is best determined with static analysis tools. D is not a non-functional test area.   | LO-3.5.a                | 1                |
| 16       | C      | C is correct. The boundaries for \$100 and \$101 overlap and only need to be tested once. The boundaries to be tested are: -1, 0, 1, 99, 100, 101, 102, 499, 500, 501  | LO-3.2.a                | 1                |
| 17       | B      | B is correct.<br>See table below   | LO-3.3.a                | 1                |
| 18       | C      | C is correct. A and B are the investments in the ROI and C is the expected return. D is not a factor in the equation.  | LO-4.2.a                | 1                |
| 19       | B      | B is correct. If done correctly, test automation can improve the overall efficiency of testing and thereby reduce costs. A is not necessarily a cost reducer because those people will have to be backfilled as the manual testing scope expands. C is not correct because while low cost tools may have a lower entry cost, they may have a higher usage cost over the lifetime of the tool. Just using low cost tools will not ensure that automation can reduce overall testing costs. D is not correct because manual testers are not usually replaced by automation – their roles are just expanded and their coverage increased. | LO-4.4.b                | 1                |

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| 20       | A      | A is correct. The build acceptance/verification tests provide the highest return and visibility for the automation project. They also help to encourage better testing from the developers as they know their software will be rejected if it doesn't pass these first tests.  | LO-4.6.b                | 1                |
| 21       | C      | C is correct. Having shared code allows re-use of modules across different automation implementations, thus reducing development and maintenance efforts. A is not correct because the shared code is part of the function library. B is not correct because this doesn't affect the engineer's ability to use new technologies. D is not correct because one of the advantages of a shared framework is a standard naming convention that is used by all automation engineers.  | LO-4.3.b                | 1                |
| 22       | B      | B is correct. Keyword-driven is well suited for this as action words can be assigned for the state transitions and the data can be identified and stored separately from the scripts. A is not correct because keyword-driven will be more maintainable in the frequently changing Agile environment. C is not correct because this is not a type of test automation. D is not correct because in-line scripts have all the data and action within a test script which will lead to higher maintenance efforts and costs.  | LO-4.3.a                | 1                |
| 23       | D      | D is correct. Defects that are found earlier are less expensive for the team and earlier fixes improve the efficiency of future development and testing, thus further reducing the costs. A is not correct because there may be an initial cost for implementing the automation, but since the releases are frequent, the overall cost should be reduced quickly. Production defects are generally very costly to fix. B is not correct because it would not be practical to implement automation for functional testing rather than regression testing. Even if that was done, the manual testers would probably not be able to keep up with frequent releases to production. C is not correct because there generally isn't an efficiency gain from fixing a large number of defects. Large numbers of fixes | LO-4.4.a                | 1                |

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|          |        | tend to result in unstable software which results in more defects.   |                         |                  |
| 24       | B      | B is correct. Automating chaos just results in faster chaos.   | LO-4.5.a                | 1                |
| 25       | D      | D is correct. This is a role that is often taken by the manual testers. This allows the manual tester to understand the coverage and effort still required by the manual testing. A and B are the responsibilities of the automation engineers. C is the responsibility of the test manager.   | LO-4.6.a                | 1                |
| 26       | A      | A is correct. If there are no requirements, then the targets to be reached cannot be identified and test results can't be determined to have passed or failed. B is not correct. This may be true even if the requirements are specified. C is not correct because tuning the tools is not a factor, although tuning the system may be. D is not correct because the exit criteria can't even be defined without the requirements being defined. | LO-5.3.b                | 1                |
| 27       | A      | A is correct. This is a major goal in running a preliminary test. B is not correct as this should be a part of data checking rather than environment checking. Running a single test will not ensure there is enough data for the entire test. C and D are not correct as the preliminary test will not prove this.  | LO-5.5.b                | 1                |
| 28       | C      | C is correct. The performance tests must be run again after changes, particularly tuning changes, are made to the system. A is incorrect because most of the monitoring tools also log what is happening. B sometimes happens, but even transient issues must be diagnosed. D may also happen, but this isn't the primary reason for needing to repeat tests.  | LO-5.6.a                | 1                |
| 29       | C      | C is correct. The concept of "acceptable" performance is subjective and varies between users. A is not correct because specific performance requirements should be in the overall requirements for a system. B is not correct because performance will definitely matter if it's slow. D is not correct because performance corrections in production will be expensive and  | LO-5.2.b                | 1                |

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|          |        | potentially disruptive.  |                         |                  |
| 30       | D      | D is correct. This should occur during acceptance testing as part of contractual acceptance and OAT. A should occur during requirements. B should occur during design and unit testing. C should occur during integration testing.   | LO-5.2.c                | 1                |
| 31       | C      | C is correct. The metrics must be meaningful to the stakeholders or they will not be useful.   | LO-5.4.a                | 1                |
| 32       | B      | B is correct. The frequency of the activities is not known and that is necessary to execute the performance scripts with the correct volume for each transaction type.   | LO-5.4.b                | 1                |
| 33       | A      | A is correct. This is one of the important uses of a tool and is generally impossible to do without tool support, particularly for a long period of time. Because this is an important requirement for performance testing, it is often used to justify the cost of the tool. B does not need a tool because response time for an individual transaction can be done manually. C is not a goal of performance testing. D is not true. Performance tools don't know what to test and can't automatically generate the test scripts. | LO-5.6.b                | 1                |
| 34       | A      | A is correct. Cybersecurity should be considered from the point of design all the way through the lifecycle of the system.   | LO-6.4.a                | 1                |
| 35       | D      | D is correct. Intrusion detection determines that an intrusion has occurred and should activate the necessary responses and communication to prevent further damage to the system.   | LO-6.5.d                | 1                |
| 36       | A      | A is correct. Verification verifies that the system was built to the requirements (built right) and validation will verify if the right thing was built meaning that it can deal with both expected and unexpected threats.  | LO-6.2.a                | 1                |
| 37       | A      | A is correct. Cybersecurity testing does not just expose problems, it also looks at what the system does to recover when problems have occurred. B is not correct because that is not the only focus of the testing. The testing looks at detection,   | LO-6.3.a                | 1                |



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|          |        | response and recovery. C is not correct because security testing can occur at the component level. D is not correct because other types of testing such as performance testing may also require the same skills.  |                         |                  |
| 38       | C      | C is correct. A port scan is done using a tool that examines the system without executing any code (static testing). The others are all dynamic tests that are conducted while the system is operating.   | LO-6.4.b                | 1                |
| 39       | C      | C is correct. These are a part of the Detect stage. A is Identify. B is Protect. D is Recover.  | LO-6.4.c                | 1                |
| 40       | A      | A is correct. White-box testing is used to defend a system against someone who has inside knowledge of an organization or system and does not depend on reconnaissance to find out about system vulnerabilities. B is an example of black-box testing threat. C and D are not correct.  | LO-6.5.b                | 1                |
| 41       | C      | C is correct. Black-box testing is focused on threats that might be available to a person who is external to a company. This concentrates on what they can discover without having any insider knowledge of the system or the organization.   | LO-6.5.c                | 1                |
| 42       | A      | A is correct. User guides should provide information regarding the day-to-day activities of a user which will help the tester to understand what areas need to be covered in the usability testing. B is not correct because this information would be more helpful for functional testing. C is not correct because error recovery is not the primary focus of usability testing (although it is sometimes a consideration). D is not correct because user guides don't usually have performance information in them, unless the performance is remarkably slow, and this would not particularly help with usability testing anyway. | LO-7.2.a                | 1                |
| 43       | D      | D is correct. UX considers the user's experience with the software before, during and after use.  | LO-7.4.b                | 1                |
| 44       | D      | D is correct. Accessibility is the degree to which a component or system can be used by people with the widest range of characteristics and capabilities to achieve a specific goal in a specified context of   | LO-7.7.a                | 1                |



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|          |        | use. A, B and C are subsets of the larger set.  |                         |                  |
| 45       | A      | A is correct. This includes the quality characteristic usability and describes the sub-characteristics of it.   | LO-7.6.a                | 1                |
| 46       | C      | C is correct. This is a description of Operability.   | LO-7.6.b                | 1                |
| 47       | B      | B is correct. In this case breadth is the goal because it will provide the widest possible sample.  | LO-7.2.b                | 1                |
| 48       | D      | D is correct. The goal of giving general tasks is to see if the user can figure out how to accomplish their tasks with little or no instruction.  | LO-7.5.b                | 1                |
| 49       | B      | B is correct. This is a standard used for any software developed for the federal government in the US.  | LO-7.7.b                | 1                |
| 50       | B      | B is correct. The user group for connected devices such as smart phones is huge and their expectations are wildly varying. A is not correct because users are becoming more savvy regarding what they want. C is not correct because connected devices and their applications do have good flexibility particularly for usability. D is not correct because users expect a consistent experience as they move between their connected devices.  | LO-8.4.a                | 1                |
| 51       | A      | A is correct. The earlier the better with these types of requirements.  | LO-8.4.b                | 1                |
| 52       | A      | A is correct. In this case you are testing the interaction of the software with the actual refrigerator and need to be sure the refrigerator responds correctly. An emulator, if there is one, will be the most reliable way to test this software. B is not correct because a simulator will not show if the hardware is responding correctly. C is not correct because you'd need a lot of refrigerators and that's the same with D (or maybe the cloud couldn't support that much weight ☺). | LO-8.3.a                | 1                |
| 53       | D      | D is correct. There is a wide range of users in the connected devices world and many potential usages and that makes planning and executing usability testing quite difficult because the usages may not be known and finding a representative set  | LO-8.4.c                | 1                |

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|          |        | of users can be tricky. A is not correct because users may not be able to articulate what they want, but they do have expectations for usability. B is not correct because there are many users and some will undoubtedly be available for the testing. C is true but that isn't a factor in making usability testing difficult.  |                         |                  |
| 54       | C      | C is correct. Detailed test cases are not needed, but enough information needs to be captured so the tests are repeatable. A is not correct because test cases are not the appropriate place to document requirements, regardless of the approach. B is not correct because these techniques do not actually generate the test cases but rather identify test conditions. D is not correct because exploratory should not be the only approach used.  | LO-8.5.a                | 1                |
| 55       | C      | C is correct. Combinatorial techniques such as pairwise or classification trees are usually used to reduce the test set from all possible combinations to a testable set of combinations.   | LO-8.4.f                | 1                |
| 56       | A      | A is correct. If security isn't designed into the software and tested throughout the lifecycle it will be expensive, if not impossible, to implement later. B is not correct. Testing is done in case there are vulnerabilities that are missed, not because the developers are incompetent. C is not correct because security testing is needed throughout development regardless of the intended use of the software. No one wants their refrigerator to be hacked. D is not correct because the testing needs to occur regardless of what the users understand about security testing. | LO-8.4.e                | 1                |
| 57       | A      | A is correct. The biggest challenge is that the testing tends to take long periods of time running in a stable environment, but these long periods of time are difficult to find in the high speed release environment of the connected device world. B is not correct because applications should still be tested, even if they are unlikely to fail. C is not correct because the testing can be done, but generally is more compressed than we would like. D is true but does not explain why reliability testing  | LO-8.4.h                | 1                |

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|          |        | is challenging.  |                         |                  |
| 58       | C      | C is correct. This is an expected benefit of a DevOps project. A and D are not correct. The same people are needed, but their roles and extent may change. B is not correct because test automation is not necessarily easier when built incrementally – there may be more maintenance required than would be needed if the automation was built at the end.   | LO-9.1.b                | 1                |
| 59       | B      | B is correct. Testing during planning means to gather accurate requirements and define testable acceptance criteria for them. A, C, and D are all good activities and are needed in DevOps, but are not the goals of testing during planning.  | LO-9.3.a                | 1                |
| 60       | C      | C is correct. Continuous delivery is dependent on continuous integration (and continuous testing). A is not correct because the integration can occur without deployment. B is not correct because continuous testing can occur without continuous integration or deployment. It is, of course, more effective with the CI/CD components. D is not correct because deployment can occur without monitoring.  | LO-9.2.a                | 1                |
| 61       | D      | D is correct. This is the correct order of the stages.   | LO-9.2.d                | 1                |
| 62       | A      | A is correct. The purpose of infrastructure as code is to have a set of scripts that can provision and manage the test and production environments. This allows the environments to be completely rebuilt using scripts that can be modified to include necessary configuration changes. B is not correct because this is a part of continuous deployment but it is helped if IaC is in place. C is the goal of monitoring tools. D is not correct because this is not the primary purpose. Although these tools could be used to modify live production environments, it's unlikely that the entire live production environment would be rebuilt without impacting users. | LO-9.4.b                | 1                |
| 63       | B      | B is correct. While performance testing should be run throughout the SDLC, the full performance testing executions occur in the staging  | LO-9.3.d                | 1                |

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|          |        | environment which is representative of the production environment running most of the software for the release. A and C are not correct because performance testing can and should be run throughout the SDLC. D is not correct because active testing is still in progress at this time.   |                         |                  |
| 64       | C      | C is correct. Test automation tools are vital to the implementation of continuous testing. Even a large number of manual testers would not be able to keep up with the workload and execute the required tests fast enough to provide the return the developers need. A is not correct because this is an automated process. B is not correct because well documented regression tests are probably out of date by the time the documentation is completed – better to automate than to document. D is not correct because a DevOps environment requires testing to start while the software is being developed and can't wait for it to stabilize. | LO-9.4.a                | 1                |
| 65       | B      | B is correct. This set of tools is normally called a toolchain.   | LO-9.4.c                | 1                |

Table for question 17 above.

|   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| Condition                                 |   |   |   |   |   |   |
| Too wet                                   | Y | N | N | N | N | N |
| Watering allowed                          | - | N | Y | Y | Y | Y |
| Rain predicted tomorrow                   | - | - | N | Y | N | Y |
| > 1 day rain predicted in next three days | - | - | N | N | Y | Y |
| Results                                   |   |   |   |   |   |   |
| No water                                  | Y | Y |   |   |   |   |
| Normal water                              |   |   | Y |   |   |   |
| ½ normal amount of water                  |   |   |   | Y | Y |   |
| ¼ normal amount of water                  |   |   |   |   |   | Y |