Sample Exam - Questions

ISTQB® Technical Test Analyst Syllabus

Advanced Level

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International Software Testing Qualifications Board

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Legal

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Document Responsibility

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

Acknowledgements

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Revision History

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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
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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

Questions

Question #1 (1 Point)

Which of the following are generic risk factors that should be considered by the Technical Test Analyst?

a) Large number of defects found with the reliability of the software.
b) Technology factors such as complexity and availability of tools.
c) Availability of documentation from legacy systems to be used to verify the accuracy of computations.
d) Budgetary restrictions on the project.
e) High change rates of the business use cases.

Select TWO options.

Question #2 (1 Point)

When participating in a risk analysis, the Technical Test Analyst is expected to work closely with which of the following sets of people?

a) Users
b) Business analysts
c) Project sponsors
d) Developers

Select ONE options.

Question #3 (1 Point)

Which of the following statements about condition coverage is true?

a) It requires setting each atomic condition to true and false and requires the resulting decision to be tested with both true and false outcomes.
b) It requires evaluating the decision with both true and false outcomes, regardless of the atomic conditions.
c) It requires setting each atomic condition to true and false but does not require the resulting decision to be tested with both true and false outcomes.
d) It provides more thorough coverage than decision coverage.

Select ONE options.

Question #4 (1 Point)

You are testing a photo-enforcement system for traffic control in an intersection. A photo will be taken if the following two conditions are true: The light is red (RED) and the front wheels of the car are over the line marking the beginning of the intersection (WHEELS).

Consider these sets of values:

1. RED + WHEELS
2. RED + not WHEELS
3. not RED + WHEELS
4. not RED + not WHEELS

Assume the logic in the code is as follows:

```
IF RED AND WHEELS THEN
        TAKE THE PHOTO
ELSE
        DO NOT TAKE THE PHOTO
```

Given this information, which sets of values provides the minimum tests to achieve 100% decision/condition coverage?

a) 1 and 2 or 1 and 3.
b) 1, 2, 3 and 4.
c) 2 and 3.
d) 1 and 4.

Select ONE options.

Question #5 (1 Point)

You are testing a photo-enforcement system for traffic control in an intersection. It has been determined that a photo should be taken if the signal light is red (RED) or the car is speeding (SPEED) and if the front wheels of the car are over the line marking the beginning of the intersection (WHEELS).

Consider these sets of test values:

1. RED + SPEED + WHEELS
2. RED + SPEED + not WHEELS
3. RED + not SPEED + WHEELS
4. RED + not SPEED + not WHEELS
5. not RED + SPEED + WHEELS
6. not RED + SPEED + not WHEELS
7. not RED + not SPEED + WHEELS
8. not RED + not SPEED + not WHEELS

Assume the logic in the code is as follows:

```
IF ((RED OR SPEED) AND WHEELS) THEN
        TAKE THE PHOTO
ELSE
        DO NOT TAKE THE PHOTO
```

Given this information, which sets of values provides the minimum tests to achieve 100% modified condition/decision coverage?

a) 1, 3, and 8.
b) 2 and 8.
c) 3, 4, 5, and 7.
d) 1, 5, 7, and 8.

Select ONE options.

Question #6 (1 Point)

You are testing a photo-enforcement system for traffic control in an intersection. The requirements state a photo shall be taken if the signal light is red (RED) or the car is speeding (SPEED) and if the front wheels of the car are over the line marking the beginning of the intersection (WHEELS).

Consider these sets of values:

1. RED + SPEED + WHEELS
2. RED + SPEED + not WHEELS
3. RED + not SPEED + WHEELS
4. RED + not SPEED + not WHEELS
5. not RED + SPEED + WHEELS
6. not RED + SPEED + not WHEELS
7. not RED + not SPEED + WHEELS
8. not RED + not SPEED + not WHEELS

Assume the logic in the code is as follows:

```
If ((RED or SPEED) and WHEELS) then
        Take the photo
Else
        Do not take the photo
```

Given this information, which sets of values provide the minimum tests to achieve 100% multiple condition coverage?

a) All the sets are needed.
b) 3, 4, 5, and 7.
c) 1, 3, and 8.
d) 1, 5, 7, and 8.

Select ONE options.

Question #7 (2 Points)

You are testing a photo-enforcement system for traffic control in an intersection. The requirements state that a photo shall be taken if the signal light is red (RED) or the car is speeding (SPEED) and if the front wheels of the car are over the line marking the beginning of the intersection (WHEELS).

Consider these sets of values:

1. RED + SPEED + WHEELS
2. RED + SPEED + not WHEELS
3. RED + not SPEED + WHEELS
4. RED + not SPEED + not WHEELS
5. not RED + SPEED + WHEELS
6. not RED + SPEED + not WHEELS
7. not RED + not SPEED + WHEELS
8. not RED + not SPEED + not WHEELS

Assume the logic in the code is as follows:

```
If ((RED or SPEED) and WHEELS) then
        Take the photo
Else
        Do not take the photo
```

Given this information, which sets of values provide the minimum tests to achieve 100% path coverage.

a) 3, 4, 5, 7
b) 2, 3
c) 1, 3, 8
d) 1

Select ONE options.

Question #8 (1 Point)

Which of the following types of defects are targeted by API testing?

a) Loss of transactions.
b) Non-conformance to coding standards.
c) Incorrect data handling.
d) Installation defects.
e) GUI faults.

Select TWO options.

Question #8 (1 Point)

You are the Technical Test Analyst working on the testing of software that will control the movement of a roof on a new national sports stadium that seats 100,000 spectators. A failure analysis has shown that if the software system fails then it may cause the roof to break up and fall on the spectators. The government has requested that the level of testing for this software exceeds that normally required by the relevant regulatory standards.

Which is the level of test coverage you would expect to be achieved in the testing of the control software for the stadium roof?

a) Branch coverage + Modified Condition/Decision coverage.
b) Branch coverage + Statement coverage.
c) Modified Condition/Decision coverage.
d) Multiple Condition coverage.

Select ONE options.

Question #9 (2 Points)

Below is the pseudo-code for a TRICKY program:

```
0   program TRICKY
1   var1, var2, var3 : integer
2   begin
3       read ( var2 )
4       read ( var1 )
5       while var2 < 10 loop
6           var3 = var2 + var1
7           var2 = 4
8           var1 = var2 + 1
9           print ( var3 )
10          if var1 = 5 then
11              print ( var1 )
12          else
13              print ( var1+1 )
14          endif
15          var2 = var2 + 1
16      endloop
17      write ( “Wow – that was tricky!” )
18      write ( “But the answer is…” )
19      write ( var2+var1 )
20  end program TRICKY
```

Which of the following statements about the TRICKY program MOST correctly describes any control flow anomalies in it?

a) The TRICKY program contains no control flow anomalies.
b) The TRICKY program contains unreachable code and an infinite loop.
c) The TRICKY program contains unreachable code.
d) The TRICKY program contains a loop with multiple entry points.

Select ONE options.

Question #10 (2 Points)

Below is the pseudo-code for a program that calculates and prints sales commissions:

```
0    program Calculate Commission
1    total, number : integer
2    commission_hi, commission_lo : real
3    begin
4        read ( number )
5        while number ≠ -1 loop
6            total = total + number
7            read ( number )
8        endloop
9        if total > 1000 then
10           commission_hi = 100 + 0.2 * ( total – 1000 )
11       else
12           commission_lo = 0.15 * total
13       endif
14       write ( “This salesman’s commission is:”)
15       write ( commission_hi )
16   end program Calculate Commission
```

Which of the following correctly lists data flow anomalies that exist in the ‘Calculate Commission’ program?

a) Commision_hi: line 10; commission_lo: line 12
b) Number: line 5; number: line 6
c) Total: line 6; commision_hi: line 10; commission_lo: line 12
d) Total: line 6; commission_lo: line 12; commision_hi: line 15

Select ONE options.

Question #11 (2 Points)

You have been provided with the following system-wide average measures for the four systems, W, X, Y and Z.

System	W	X	Y	Z
Cyclomatic Complexity (CC)	23	8	12	7
Cohesion (CH)	High	Medium	Low	High
Coupling (CP)	Low	High	Medium	Medium
Commented Code (CO)	60%	10%	45%	8%
Repeated code instances (RE)	9	2	3	12

Budget is available to improve the maintainability of the code in each of the four systems by applying the results of static analysis to the individual components.

Which of the following is the BEST application of static analysis if only two measures per system can be resourced?

a) W – CO, RE X – CC, CH Y – CP, CO Z – CC, RE
b) W – CC, CP X – CH, CO Y – CC, CH Z – CO, RE
c) W – CC, RE X – CP, CO Y – CC, CH Z – CO, RE
d) W – CH, CO X – CC, RE Y – CP, RE Z – CC, CH

Select ONE options.

Question #12 (3 Points)

Which of the following is a way to use call graphs to determine integration testing requirements?

a) Establishing the number of locations within the software from where a method or function is called.
b) Establishing the number of locations within the software from where a module or system is called.
c) Determining conditional and unconditional calls for performance analysis.
d) Detecting areas to be targeted for possible memory leaks.

Select ONE options.

Question #13 (1 Point)

You are the Technical Test Analyst working on a project developing a new Ambulance Dispatch System (ADS). This ADS assists operators in taking calls about incidents, identifying available ambulances and mobilizing ambulances to handle the incidents. You know that the ADS was designed using an object-oriented approach and implemented using a language with automated garbage collection. During system and acceptance testing the system has been perceived to be generally performing correctly, but also rather slowly, and it has also occasionally 'crashed'; the subsequent (brief) investigations were inconclusive.

Which of the following statements would BEST justify the use of dynamic analysis in this situation?

a) Dynamic analysis could be used to measure response times for various functions to subsequently allow system tuning.
b) Dynamic analysis could be used to generate call graphs of the system to allow targeted performance enhancement.
c) Dynamic analysis could identify memory access violations caused by a wild pointer that result in the occasional 'crashes'.
d) Dynamic analysis could be used to determine if defects introduced by programmers failing to release allocated memory are causing the 'crashes'.

Select ONE options.

Question #14 (2 Points)

Assume you are working as a technical test analyst on a project where a new banking system is being developed. This system will store customer financial data, including personally identifying information, account numbers and balances, and transaction history.

Based on this information, which of the following topics are you most likely to need to contribute to the test plan?

a) Test data anonymization.
b) Coordination of distributed components.
c) Testing data encryption.
d) Testing in production.

Select ONE options.

Question #15 (2 Points)

A system has an editable, free-form input field labeled “File Name to Open”. Based on this information only, which of the following security threats should you test?

a) Cross-site scripting.
b) Denial of service.
c) Buffer overflow.
d) Breaking encryption.

Select ONE options.

Question #17 (2 Points)

Scenario 1.

Assume that you are working for a start-up company with big ambitions but a limited initial funding. They are creating a system that will provide customized loyalty and rewards programs for small- and medium-sized businesses selling to customers on the web. These companies enroll themselves on the system's web store. This allows the companies to create customized buttons, to be placed on their websites, that let customers enroll in the companies' loyalty and rewards program. Each subsequent purchase earns points, and both companies and their customers can manage the program; for example, companies can determine the number of points required for customers to receive a free product or service, and customers can monitor their points.

Your employer's marketing staff is heavily promoting the system, offering aggressive discounts on the first year's fees to sign up new companies. The marketing materials state that the service will be highly reliable and extremely fast for companies and their customers.

At this time, the requirements are complete, and development of the software has just begun. The current schedule will allow companies and their customers to enroll starting in three months.

Your employer intends to use cloud computing resources to host this service, and to have no hardware resources other than ordinary office computers for its developers, testers, and other engineers and managers. Industry-standard web-based application software components will be used to build the system.

The production environment will be used for testing, and the operations team has already defined and tested the process for configuring this environment as needed.

Refer to scenario 1. Assume that marketing wants the mean time between failure to be three months or longer, with a mean time to repair of ten minutes or less when the system does fail. Which of the options should be addressed as challenges in planning for the reliability testing of this system prior to release?

a) Cost of a reliability test environment.
b) Duration of the reliability testing.
c) Configuring a production-like test environment.
d) Determining the target availability for the system.
e) Monitoring reliability in production.
f) Forcing hardware and operating system faults.
g) Defining the reliability requirement.

Select THREE options.

Question #18 (2 Points)

Scenario 1.

Assume that you are working for a start-up company with big ambitions but a limited initial funding. They are creating a system that will provide customized loyalty and rewards programs for small- and medium-sized businesses selling to customers on the web. These companies enroll themselves on the system's web store. This allows the companies to create customized buttons, to be placed on their websites, that let customers enroll in the companies' loyalty and rewards program. Each subsequent purchase earns points, and both companies and their customers can manage the program; for example, companies can determine the number of points required for customers to receive a free product or service, and customers can monitor their points.

Your employer's marketing staff is heavily promoting the system, offering aggressive discounts on the first year's fees to sign up new companies. The marketing materials state that the service will be highly reliable and extremely fast for companies and their customers.

At this time, the requirements are complete, and development of the software has just begun. The current schedule will allow companies and their customers to enroll starting in three months.

Your employer intends to use cloud computing resources to host this service, and to have no hardware resources other than ordinary office computers for its developers, testers, and other engineers and managers. Industry-standard web-based application software components will be used to build the system.

The production environment will be used for testing, and the operations team has already defined and tested the process for configuring this environment as needed.

Refer to scenario 1. Assume that marketing wants to ensure that the system will be very fast. Which of the options should be addressed as challenges in planning for the performance testing of this system prior to release?

a) Defining the performance requirements.
b) Selection of test data.
c) Compatibility of performance test tools.
d) Configuring a production-like test environment.
e) Developing a complex simulator.
f) Anonymization of test data.
g) Cost of performance test tools.

Select TWO options.

Question #19 (2 Points)

Which of the following test types will be most important for a software control system that will be integrated into a wider system and is expected to generate several variants and undergo a number of environment changes over a period of 10 years?

a) Recoverability testing.
b) Maintainability testing.
c) Adaptability testing.
d) Replaceability testing.
e) Security testing.

Select TWO options.

Question #20 (1 Point)

Consider the following product risk: Abnormal application termination due to network connection failure

Which of the following is the appropriate test type to address this risk?

a) Reliability testing.
b) Performance testing.
c) Operability testing.
d) Portability testing.

Select ONE options.

Question #21 (1 Point)

Scenario 1.

Assume that you are working for a start-up company with big ambitions but a limited initial funding. They are creating a system that will provide customized loyalty and rewards programs for small- and medium-sized businesses selling to customers on the web. These companies enroll themselves on the system's web store. This allows the companies to create customized buttons, to be placed on their websites, that let customers enroll in the companies' loyalty and rewards program. Each subsequent purchase earns points, and both companies and their customers can manage the program; for example, companies can determine the number of points required for customers to receive a free product or service, and customers can monitor their points.

Your employer's marketing staff is heavily promoting the system, offering aggressive discounts on the first year's fees to sign up new companies. The marketing materials state that the service will be highly reliable and extremely fast for companies and their customers.

At this time, the requirements are complete, and development of the software has just begun. The current schedule will allow companies and their customers to enroll starting in three months.

Your employer intends to use cloud computing resources to host this service, and to have no hardware resources other than ordinary office computers for its developers, testers, and other engineers and managers. Industry-standard web-based application software components will be used to build the system.

Consider scenario 1. Assume that adequate system response time is considered one of the most important product risks for this system.

Which of the following statements is true?

a) Performance testing should happen after functional testing is done.
b) Dynamic performance testing should happen during code reviews.
c) Performance testing should start on initial builds of the system.
d) Reliability testing should happen after performance testing.

Select ONE options.

Question #22 (1 Point)

Scenario 1.

Assume that you are working for a start-up company with big ambitions but a limited initial funding. They are creating a system that will provide customized loyalty and rewards programs for small- and medium-sized businesses selling to customers on the web. These companies enroll themselves on the system's web store. This allows the companies to create customized buttons, to be placed on their websites, that let customers enroll in the companies' loyalty and rewards program. Each subsequent purchase earns points, and both companies and their customers can manage the program; for example, companies can determine the number of points required for customers to receive a free product or service, and customers can monitor their points.

Your employer's marketing staff is heavily promoting the system, offering aggressive discounts on the first year's fees to sign up new companies. The marketing materials state that the service will be highly reliable and extremely fast for companies and their customers.

At this time, the requirements are complete, and development of the software has just begun. The current schedule will allow companies and their customers to enroll starting in three months.

Your employer intends to use cloud computing resources to host this service, and to have no hardware resources other than ordinary office computers for its developers, testers, and other engineers and managers. Industry-standard web-based application software components will be used to build the system.

Consider scenario 1. Assume that you are executing security tests against the system

Which of the following types of defects would you expect to find during this testing?

a) System clears screen too quickly after login.
b) System removes user temporary files after logout.
c) System allows unauthorized access to data.
d) System allows access from unsupported browser.

Select ONE options.

Question #23 (1 Point)

A technical test analyst has been invited to the review of an architectural design specification. The review has been called at short notice for the following day and although there is nothing in the analyst's diary for that time, there is no time to prepare.

Which of the following would be the most appropriate response to the invitation?

a) I am free at that time and I will be pleased to attend.
b) I do not have time to prepare but I will attend rather than cause a delay.
c) I will not have enough time to prepare for a review meeting tomorrow, so I must decline unless the review can be postponed.
d) I cannot attend the review because I am unfamiliar with the specification.

Select ONE options.

Question #24 (2 Points)

You have been participating in an architectural review of a new product design. This is an embedded product that has severe memory restrictions. Consider the following lists of programming practices and problems that can result from using those practices.

Programming Practices:

1. Connection pooling
2. Data caching
3. Lazy instantiation
4. Transaction concurrency

Problems:

A. Performance impact when the instantiation is needed
B. Transaction loss due to processor unavailability
C. Errors in multi-threading logic
D. Stale data

Which of the above is a programming practice that can be used to reduce unnecessary memory use in this scenario and what are the possible problems in using this practice?

a) Practice 2, Problem D
b) Practice 4, Problem C
c) Practice 3, Problem A
d) Practice 1, Problem B

Select ONE options.

Question #25 (2 Points)

You are participating in a code review and have noticed a problem in the following section of pseudo-code (assume *** indicates a comment).

```
*** this code checks for valid card type ***
If credit card is type “Discover” then
        Display error message 437
Else if credit card is type “Visa” or “MasterCard” then
        Process purchase
Else if credit card is type “AmericanExpress” then
        Display error message 439
Else
        Display error message 440
End if
```

Which of the following problems is demonstrated in this section of the code and why should it be corrected?

a) The comment in the code is incorrect, resulting in a maintainability impact.
b) An external library should be used to validate the credit card, resulting in inefficiency by not re-using existing components.
c) The most likely case is not tested first, resulting in a potential performance impact.
d) There is no default clause, resulting in potential cases not being handled.

Select ONE options.

Question #26 (1 Point)

Scenario 2.

Assume that you are involved in testing a mature application. This application is an online dating service that allows users: to enter a profile of themselves; to meet orientation-appropriate people who would be a good match for them; to arrange social events with those people; and, to block people they don't want to contact them.

Defects and test cases are managed in an existing commercial test management tool, which is working well. Source code and other project work products are stored in an open source configuration management system.

Your manager directs you to help her select a test execution automation tool to automate most of the regression testing.

Consider scenario 2. Which of the following is an important consideration in relation to the existing tools?

a) The process for storing and versioning automated tests.
b) The cost of the test execution automation tool.
c) The process of removing duplicate defect reports created by the automated tests.
d) Selecting a test execution automation tool from the test management tool vendor.

Select ONE options.

Question #27 (1 Point)

Which of the following are typical activities performed by a Technical Test Analyst when setting up a test automation project?

a) Designing the test data for the automated test cases.
b) Scheduling the test automation project and allocating time for maintenance with the test manager.
c) Defining the business process keywords for use in test cases when using keyword-driven testing.
d) Determining who will be responsible for the test analysis and design of test cases to be automated.
e) Defining the interface requirements between the project's test management tool and the test automation tool.

Select TWO options.

Question #28 (1 Point)

Which of the following statements best captures the difference between data-driven and keyword-driven test automation?

a) Keyword-driven test automation extends data-driven automation by defining keywords corresponding to business processes.
b) Data-driven test automation extends keyword-driven automation by defining data corresponding to business processes.
c) Data-driven test automation is more maintainable than keyword-driven test automation.
d) Keyword-driven test automation is easier to develop than data-driven test automation.

Select ONE options.

Question #29 (1 Point)

Which of the following describes a common technical issue that causes automation projects to fail to achieve the planned return on investment?

a) Elimination of duplication of information across tools.
b) Removal of manual checking of data exchanges between tools.
c) Use of an integrated development environment to simplify integration between tools.
d) Lack of separation between code and changeable data in the testware.

Select ONE options.

Question #30 (1 Point)

Scenario 2.

Assume that you are involved in testing a mature application. This application is an online dating service that allows users: to enter a profile of themselves; to meet orientation-appropriate people who would be a good match for them; to arrange social events with those people; and, to block people they don't want to contact them.

Defects and test cases are managed in an existing commercial test management tool, which is working well. Source code and other project work products are stored in an open source configuration management system.

Your manager directs you to help her select a test execution automation tool to automate most of the regression testing.

Consider scenario 2. Assume you are using a keyword-driven automation approach. Which of the options would be the MOST LIKELY keywords for this application?

a) Enter_Test_Data
b) Remove_Test_Data
c) Block_Person
d) Find_Match
e) Pay_Bill

Select THREE options.

Question #31 (1 Point)

Which of the following statements about fault seeding tools is correct?

a) These tools insert defects into the source code to test the input checking capabilities of the software.
b) These tools insert defects into the source code to check the level of fault tolerance of the software.
c) These tools insert defects into the source code to test the effectiveness of the test suite.
d) These tools are generally used by the developer.

Select ONE options.

Question #32 (1 Point)

Which of the following statements about performance testing and monitoring tools is correct?

a) These tools drive the application at the communications protocol level rather than through its user interface to more accurately measure response times.
b) These tools generate a load by simulating a large number of virtual users following their designated operational profiles to generate specific volumes of input data.
c) These tools capture a script from an individual user interaction and multiple identical copies of the script are then replayed in parallel to represent the full range of possible users.
d) These tools take a wide range of measurements after test execution to enable the analysis of the most significant performance characteristics of the test object.

Select ONE options.

Question #33 (1 Point)

Which of the following BEST describe the purpose of tools supporting web-based testing?

a) Executing a model of the execution-time behavior to generate test cases.
b) Changing variable values during line by line execution to isolate faults in the user interface.
c) Injecting defects into the test object for test suite quality measurement.
d) Checking for accessibility standards violations.
e) Scanning through the server checking for orphaned files.

Select TWO options.

Question #34 (1 Point)

Which of the following BEST describes how tools can support the concept of model-based testing (MBT)?

a) MBT tools can be used to generate test cases by saving interesting execution threads.
b) MBT tools significantly increase the number of paths that can be generated in a model.
c) MBT tools provide an alternative view of the internal structure of the software under test.
d) MBT tools often provide an engine that enables ‘execution’ of models but execution threads cannot be saved.

Select ONE options.

Question #35 (1 Point)

Which of the following statements about the relationship between component testing tools and build automation tools is FALSE?

a) An xUnit framework can be used to automate component testing; build automation tools execute automated component tests.
b) A JUnit framework can simplify automation of component testing in a Java environment; build automation tools automatically trigger the component tests whenever a component changes in a build.
c) Component testing frameworks can simplify automation of component testing; build automation tools allow a new build to be triggered when a component is changed.
d) A Component testing tool can be used against multiple programming languages; build automation tools allow a new build to be triggered when a component changes.

Select ONE options.