Sample Exam – Questions

Sample Exam set A
Version 4.2

ISTQB® Technical Test Analyst Syllabus Advanced Level

Compatible with Syllabus version 4.0

International Software Testing Qualifications Board

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Document Responsibility

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

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

Revision History

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Version	Date	Remarks
4.2	November 6, 2023	Minor correction of question: #35
4.1	April 27, 2023	Minor correction of question: #35
4.0	March 1, 2021	Major update to align with syllabus v4.0
2.2	November, 2020	New template applied Removal of extra questions Updates to several questions and answers.
2.1	December 19, 2019	Revisions made by AELWG to enable launch
2.0	October 5, 2019	Release of sample exam for CTAL-TTA 2019
1.3	February 19, 2019	Correction of Pick-N type question #30
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
1.01	November 23, 2012	Version for release
1.00	October 19, 2012	Version for voting

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Introduction

Purpose of this document

The sample questions and answers and associated justifications in this sample exam set 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

In this document you may find:

- Questions[1], including for each question:
  - Any scenario needed by the question stem
  - Point value
  - Response (answer) option set
- Additional questions, including for each question [does not apply to all sample exams]:
  - Any scenario needed by the question stem
  - Point value
  - Response (answer) option set

- *Answers, including justification are contained in a separate document*

[1] In this sample exam the questions are sorted by the LO they target; this cannot be expected of a live exam.

Questions

Question #1 (1 Point)

Which of the following are examples of risks that should be considered by the Technical Test Analyst?

a) A high number of reliability defects were found compared with the previous version
b) Required updates to the security testing tool database are poorly configured
c) Documentation from the legacy system to verify the accuracy of computations is lacking
d) The budget allocated to the testing on the project has been reduced
e) The change rate of business use cases is higher than expected

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 option.

Question #3 (2 Points)

Consider the simplified logic of a tea-making machine:

```
Turn on the machine
IF enough water THEN
     Boil water
     Add tea
     Show message "milk?"
     IF milk = yes THEN
          Show message "low fat?"
          IF low fat = yes THEN
               Add low fat milk
          ELSE
               Add normal milk
          ENDIF
     ENDIF
     Show message "sugar?"
     IF sugar = yes THEN
          Add sugar
     ENDIF
     Stir
     Wait 3 minutes
     Show message "please take your tea"
ELSE
     Show message "please fill up water"
ENDIF
```

What is the minimum number of test cases required to achieve 100% statement coverage of the logic for the tea-making machine?

a) 3
b) 2
c) 5
d) 6

Select ONE option.

Question #4 (2 Points)

The simplified logic of a program is as follows:

```
Statement P
IF A THEN
     IF B THEN
          Statement Q
     ELSE
          Statement R
     ENDIF
ELSE
     Statement S
     IF C THEN
          Statement T
     ELSE
          Statement U
     ENDIF
ENDIF
Statement V
```

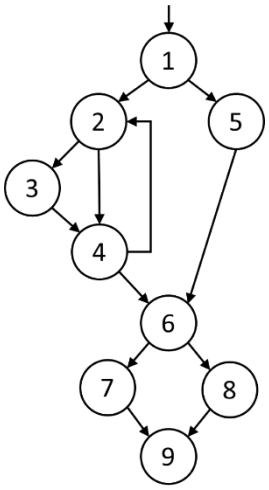
Assume that decisions B and C are independent of each other. What is the minimum number of test cases required to achieve 100% decision coverage?

a) 2
b) 3
c) 4
d) 5

Select ONE option.

Question #5 (2 Points)

You are testing code whose control flow graph is presented below. Node 1 is the entry point and node 9 is the exit point.



Assuming that all decisions in this code are independent, what is the minimum number of test cases required to achieve 100% decision coverage?

a) 2
b) 3
c) 4
d) 5

Select ONE option.

Question #6 (2 Points)

You are testing a photo-enforcement system for traffic control at 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).

The logic in the code looks like the following:

```
IF ((RED OR SPEED) AND WHEELS) THEN
     Take the photo
ELSE
     Do not take the photo
ENDIF
```

Consider these test input 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

Assuming there is no short-circuiting, which set of test input values is required to achieve full modified condition/decision coverage?

a) 1, 3, 8
b) 2, 6, 8
c) 3, 4, 5, 7
d) 1, 5, 7, 8

Select ONE option.

Question #7 (2 Points)

You are testing a photo-enforcement system for traffic control at 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).

The logic in the code looks like the following:

```
IF ((RED OR SPEED) AND WHEELS) THEN
     Take the photo
ELSE
     Do not take the photo
ENDIF
```

Consider these test input 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

Assuming no short-circuiting, which set of test input values is required to achieve 50% multiple condition coverage?

a) 3, 4, 5, 8
b) 1, 3, 5
c) 2, 4, 6, 7, 8
d) 2, 7

Select ONE option.

Question #8 (1 Point)

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

a) Issues in transaction processing of HTTP requests
b) Committed code violates the project's coding standards
c) System web service reacting incorrectly to different data in requests
d) Division by zero errors
e) Functional errors occurring on the GUI

Select TWO options.

Question #9 (3 Points)

You are the Technical Test Analyst working on the testing of software that will control the movement of the roof on a new national sports stadium that seats 100,000 spectators. A failure analysis has shown that if the software system fails 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 required by the IEC 61508 standard.

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

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

Select ONE option.

Question #10 (3 Points)

You work for a software house that provides software solutions for medical systems. Currently you are testing a software component that operates the defibrillator machine controlling the dose of electric current delivered to the heart. During the code review, the reviewers noticed that one decision in the module under test consists of 20 independent atomic conditions. You are obliged to perform white-box testing for this module and you are expected to finish it in one month.

Which white-box test technique should you choose for this scenario?

a) Multiple condition testing
b) MC/DC testing
c) Decision testing
d) API testing

Select ONE option.

Question #11 (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        print("Wow – that was tricky!")
18        print("But the answer is...")
19        print(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 and no infinite loop
d) The TRICKY program contains a loop with multiple entry points

Select ONE option.

Question #12 (2 Points)

The programmers have designed three versions of a function that finds the largest number among three integers: findMax1, findMax2 and findMax3. One of them must be chosen for the next release. The codes look as follows:

```
int findMax1(int n1, int n2, int n3) {
    int max;
    if (n1 >= n2 && n1 >= n3)
        max = n1;
    if (n2 >= n1 && n2 >= n3)
        max = n2;
    if (n3 >= n1 && n3 >= n2)
        max = n3;
    return max;
}


int findMax2(int n1, int n2, int n3) {
    int max;
    if (n1 >= n2 && n1 >= n3)
        max = n1;
    else if (n2 >= n1 && n2 >= n3)
        max = n2;
    else
        max = n3;
    return max;
}


int findMax3(int n1, int n2, int n3) {
    int max;
    if (n1 >= n2) {
        if (n1 >= n3)
            max = n1;
        else
            max = n3;
    } else {
        if (n2 >= n3)
            max = n2;
        else
            max = n3;
    }
    return max;
}
```

You were asked to select the one with the lowest cyclomatic complexity. Which ONE should you choose?

a) findMax1
b) findMax2
c) findMax3
d) You can choose any of them, because all three functions have the same cyclomatic complexity

Select ONE option.

Question #13 (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
```

The code contains data flow anomalies on lines 6 and 12 (highlighted text). Which examples of data flow anomalies can be found on these lines?

a) line 6: variable "total" is not assigned a value before using it
   line 12: variable "commission_lo" is defined but subsequently not used
b) line 6: an invalid value is assigned to variable "total"
   line 12: variable "commission_lo" is redefined before it is used
c) line 6: variable "total" is out of scope
   line 12: the "hard-coded" value "0.15" should not be used
d) line 6: the variable "number" is undefined
   line 12: the variable "total" is redefined before it is used

Select ONE option.

Question #14 (2 Points)

You have been asked to analyze the following program that calculates a sales commission:

```
     PROGRAM Commission
     barrels, totalBarrels : INTEGER
     price, sales, commission : REAL
1    price = 35.0
2    totalBarrels = 0
3    INPUT(barrels)
4    WHILE NOT(barrels == -1) DO
5       totalBarrels = totalBarrels + barrels
6       INPUT(barrels)
7    ENDWHILE
8    sales = price * totalBarrels
9    IF (sales > 1800.0)
10       commission = 0.10 * 1000.0 + 0.15 * 800.0
11       commission = commission + 0.20 * (sales - 1800.0)
12   ELSE IF (sales > 1000.0)
13       commission = 0.10 * 1000.0
14       commission = 0.15 * (sales - 1000)
15   ELSE
16       commission = 0.10 * sales
17   ENDIF
18   totalBarrels = 0
19   barrels = 0
20   OUTPUT("Total commission = ",commission)
     END PROGRAM
```

Which pair of lines represents a data flow anomaly?

a) 8–9
b) 3–19
c) 2–18
d) 13–14

Select ONE option.

Question #15 (2 Points)

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

		SYSTEM			
		W	**X**	**Y**	**Z**
Metric	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 way to improve maintainability of the code if you can address only two metrics per system?

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 option.

Question #16 (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        print("Wow – that was tricky!")
18        print("But the answer is...")
19        print(var2+var1)
20   end program TRICKY
```

Which TWO fixes to improve code maintainability would MOST likely be proposed after performing static analysis?

a) Restructuring the code
b) Improving the naming of variables
c) Reduce program coupling
d) Improving the amount of comments
e) Improving the indentation of code

Select TWO options.

Question #17 (2 Points)

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 on user actions to identify efficiency bottlenecks
b) Dynamic analysis could be used to generate control flow 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 programmers introduced defects by not properly releasing allocated memory

Select ONE option.

Question #18 (3 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 personal information, account numbers, balances, and transaction histories, but no real customer data will become available until after the system is deployed operationally.

Based on this information, which of the following topics are you MOST likely to include in the system test plan?

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

Select ONE option.

Question #19 (3 Points)

Assume you are working as a Technical Test Analyst on the system integration testing of the baggage handling system for a major airport. Most of the system components are developed by a main contractor, but the system components for baggage redirection and for handling outsized items are being developed off-shore by separate organizations. The airport operator is the customer for the project and has indicated that the system must run fast even under peak morning and evening loads. A fully representative test environment has been made available for the system integration tests and a specialist tools team has been set up to support the functional and non-functional testing. Some of the functional tests for systems integration have already been implemented but progress is slow.

Based on this information, which of the following topics are you MOST likely to identify as risks in the system integration test plan?

a) Stakeholder requirements
b) Required tool acquisition and training
c) Test environment requirements
d) Organizational considerations
e) Data security considerations

Select TWO options.

Question #20 (2 Points)

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

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

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

Select ONE option.

Question #21 (2 Points)

Consider the following product risk: “The new database is not suitable for replacing the current one”.

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

a) Adaptability testing
b) Replaceability testing
c) Capacity testing
d) Co-existence testing

Select ONE option.

Question #22 (1 Point)

Which of the following statements is CORRECT?

a) It is desirable to conduct end-to-end turnaround time tests as early as possible, even if a production-like environment is not yet available
b) Availability testing using operational profiles is performed both before and after entering operational service
c) Security testing should start with component testing and go on through integration and system testing as security issues can be introduced anytime during development
d) Maintainability can be evaluated early in the lifecycle without having to wait for a complete and running system

Select ONE option.

Question #23 (1 Point)

Which of the following statements is CORRECT?

a) Reliability tests are commonly done as part of system testing
b) Co-existence testing is normally performed immediately after component testing has been completed
c) Adaptability tests are often performed in conjunction with security tests
d) Replaceability testing is normally only performed once the overall system and potential replaceable components are available

Select ONE option.

Question #24 (2 Points)

Assume that you are working for a start-up company with big ambitions but with 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 start enrolling 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.

Assume that you are executing security tests against the system.

Which of the following types of defect 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 option.

Question #25 (2 Points)

The system integration testing for a new version of a stocks trading system is being planned. You are planning the performance efficiency tests as part of this testing. The new version has increased functionality, but the basic architecture remains the same.

The current system has so far received a positive response and the number of users has steadily increased. It enables users to trade individual stocks with a simple transaction consisting only of the user identity, stock number, quantity, and action (buy or sell).

The current system's response time to user inputs is regularly monitored by conducting performance tests supported by a tool and using a fully representative test environment. At present the system runs reliably and response times to user trading transactions are just below the maximum specified.

The marketing department anticipates that with the new functionality being introduced in the next version, the number of users is expected to double over the next 12 months. You have included scalability tests into your performance testing strategy.

When planning the performance efficiency tests, which of the following types of defects would you target in the system integration test plan as being the MOST likely to occur?

a) The simulated increase in the number of users will result in data volumes exceeding the bandwidth of the test environment
b) The system fails to meet future response time requirements for the anticipated numbers of users
c) The disk capacity requirements will exceed the resources available once more users are added
d) The system's response time will degrade when running the system for a long time under a nominal load

Select ONE option.

Question #26 (1 Point)

By entering the following phrase into the username field of the login form:

```
abcd OR 1=1
```

a tester performed an SQL injection attack and consequently obtained a list of all valid usernames for the system.

Which of the following security aspects was MOST likely to have been addressed by this test?

a) Confidentiality
b) Non-repudiation
c) Accountability
d) Availability

Select ONE option.

Question #27 (1 Point)

You work as the TTA on an agile project and you have been asked to calculate the mean time to failure (MTTF) for the system under test under a normal load.

Which of the following sources of information is MOST likely to provide you with the necessary information about the load that you should generate in your tests?

a) Product owner
b) Operational profile
c) Scrum master
d) Test environment requirements

Select ONE option.

Question #28 (1 Point)

Which of the following statements about code reviews in the context of planning performance efficiency testing is CORRECT?

a) Code reviews are not useful in performance efficiency testing, because performance can be measured only with dynamic testing on a running system
b) Code reviews are useful in performance efficiency testing, because they may detect inefficient algorithm implementation that may cause performance issues
c) Code reviews are not useful in performance efficiency testing, because performance efficiency testing usually requires the entire system to be implemented, so it is typically performed as part of system testing, which requires dynamic testing, not static testing
d) Code reviews are useful in performance efficiency testing, because static testing is not dependent on the test environment, so the testers do not need to spend time on defining and building the test environment

Select ONE option.

Question #29 (1 Point)

Which of the following statements provides the BEST rationale for including maintainability testing in a test approach?

a) Analyzability should be considered if you expect a lot of combinations need to be tested
b) Modifiability should be considered if you expect several problems to be identified within the system
c) Modularity should be considered if you are testing a system provided as commercial off-the-shelf (COTS) software
d) Reusability should be considered if you expect different versions of the same product to be developed

Select ONE option.

Question #30 (1 Point)

You work as a tester in a company that develops a desktop financial application for accountants. The users reported problems with the following scenario, and you have been tasked with testing the fix.

- Download app from the producer website
- Install it using the installation wizard
- Check if the app is installed properly
- Uninstall the app
- Check if everything was uninstalled properly

What is the reason for performing this test?

a) To test maintainability
b) To test reliability
c) To test portability
d) To test compatibility

Select ONE option.

Question #31 (1 Point)

A Technical Test Analyst has been invited to the formal 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, so I have no problem in attending
b) I do not have time to prepare but I will attend rather than cause a delay
c) I do not have time to prepare so I suggest the review is postponed
d) I do not have time to prepare, but I still might contribute some useful input

Select ONE option.

Question #32 (3 Points)

You are participating in an architectural review of a new product design. This is an embedded product that has severe memory restrictions. Consider the following 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 programming practices could 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 option.

Question #33 (3 Points)

You are participating in an architectural design review of a new product design. This is a web-based currency trading product that provides real-time information on prices for currencies selected by the user.

The following list of practices are mentioned in the design as options for ensuring response times of less than 1 second and real-time data accuracy under maximum expected loads.

Which of the following practices would you highlight as the MOST promising for achieving the requirement?

a) Load balancing
b) Data caching
c) Object orientation
d) Data replication

Select ONE option.

Question #34 (3 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 the validity of a 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 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; thus, the code is inefficient because it does not re-use 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 option.

Question #35 (3 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 pseudo-code calculates the average sales per month achieved by an
organization ***
     0    program SALES
     1    month_counter, sales_in_month, total_sales, fileID, number_of_months:
     integer
     2    average_sales: float
     3    begin
     4         *** open the sales file***
     5         fileID = open file ( "Sales" )
     6         if (fileID = 0) then
     7              *** File cannot be opened***
     8              Display error message 333
     9         else
     10             *** get the number of months you want to consider
     11             Read (number_of_months)
     12             month_counter = 1
     13             total_sales = 0
     14             while month_counter <= number_of_months loop
     15                  *** get sales for month from sales file using the
     GetSales function***
     16                  sales_in_month = GetSales (month_counter, fileID)
     17                  *** add the sales to the total***
     18                  total_sales = total_sales + sales_in_month
     19                  month_counter = month_counter + 1
     20             endloop
     21             *** calculate the average monthly sales and output that
     value***
     22             average_sales = total_sales / number_of_months
     23             Write (average_sales)
     24        endif
     25   end program SALES
```

Which of the following problems is demonstrated in this section of code?

a) Files are not checked for existence before attempting to access
b) Divisors are not tested for zero
c) Comments are inconsistent with the code
d) There are unused variables

Select ONE option.

Question #36 (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) Reserving time for working on the test automation project in agreement with the test manager
c) Writing the test scripts based on keywords and data provided by Test Analysts
d) Determining who will be responsible for the analysis and design of test cases to be automated
e) Defining how the project's test management tool will communicate with the new test automation tool

Select TWO options.

Question #37 (1 Point)

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

a) Keyword-driven test automation can extend data-driven automation by defining keywords corresponding to actions in business processes
b) Data-driven test automation extends keyword-driven automation by storing test data in spreadsheets or databases
c) Data-driven test automation is more maintainable than keyword-driven test automation
d) Keyword-driven test automation requires fewer skills to develop than data-driven test automation

Select ONE option.

Question #38 (1 Point)

Which of the following describes a common technical issue that causes test 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) Failure to include software that automatically handles test failures

Select ONE option.

Question #39 (2 Points)

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 do not 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.

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) Enter_Profile
d) Find_Match
e) Pay_Bill

Select TWO options.

Question #40 (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 test analyst to measure the coverage achieved by specified tests

Select ONE option.

Question #41 (1 Point)

Which of the following statements about performance testing tools is CORRECT?

a) These tools drive the application at the communications protocol level rather than through its user interface to measure response times more accurately
b) These tools generate a load by simulating many virtual users using operational profiles to generate input test data
c) These tools capture a script from one individual user interaction and multiple identical copies of this 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 option.

Question #42 (1 Point)

Which of the following CORRECTLY describe the objectives of tools supporting web-based testing?

a) To generate test cases by executing a model of the test object's required behavior
b) To isolate faults in the user interface by changing variable values during line-by-line code execution
c) To measure the quality of a test suite by injecting defects into the test object
d) To check for accessibility standards violations
e) To check for orphaned files by scanning through the server

Select TWO options.

Question #43 (1 Point)

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

a) MBT tools are used to generate test cases that reflect the required behavior presented in a model of the test object
b) MBT tools execute the model of the test object's behavior to identify defects rather than executing tests on the test object
c) MBT tools provide an internal view of the test object and are used to automatically generate white-box test cases
d) MBT tools automatically generate test cases to achieve a required level of coverage of the test object source code

Select ONE option.

Question #44 (1 Point)

Which of the following statements about component testing tools and build automation tools is TRUE?

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 cause a new build to be triggered when a component is changed
d) Component testing tools can be used against multiple programming languages; build automation tools are triggered when a component is tested

Select ONE option.

Question #45 (1 Point)

Which of the following statements BEST captures the purpose of an emulator when used to support mobile application testing?

a) A mobile emulator is used to replace real mobile devices in testing but is limited to initial functional testing
b) A mobile emulator is used to replace real mobile devices in testing but does not allow early-on usability testing such as evaluating user interface aesthetics
c) A mobile emulator is used to test different features of a mobile application early on, using specially compiled versions of the software, that would not run on a real device
d) A mobile emulator allows dynamic testing of a mobile application that has been compiled and packaged for a specific platform without installing it on a real device

Select ONE option.

Appendix: Additional Questions

Question #X1 (1 Point)

TTA-4.3.1 (K2) Explain the reasons for including security testing in a test approach

A new personal banking system is to be developed for use on mobile devices. Which ONE of the following options is valid reason to include security testing in the test approach?

a) Ensuring that automated mobile app updates do not block users from accessing their accounts
b) Ensuring that no confidential information is left in temporary files on the phone's SIM card memory
c) Ensuring that the application installs correctly on many different mobile phone models and OS versions
d) Ensuring that the application provides the planned functionality without overloading the phone's CPU

Select ONE option.

Question #X2 (1 Point)

TTA-4.4.1 (K2) Explain the reasons for including reliability testing in a test approach

Which of the following factors must be considered when planning reliability tests?

a) Ability to simulate hardware and operating system defects
b) Monitoring resources used
c) Identifying vulnerabilities that lead to a denial of service
d) Determining the peak loads for the system

Select ONE option.

Question #X3 (1 Point)

TTA-4.5.1 (K2) Explain the reasons for including performance testing in a test approach

A web-based holiday booking system expects to handle three times its average number of visitors during the peak month of the year.

Which of the following reasons would justify including performance testing in the test approach?

a) The web servers may be unable to handle the maximum number of transactions
b) The expected peak load defined by the business analysts may be too high
c) Functional tests can be re-used for performance testing
d) The response time to holiday enquiries may be unacceptable for users
e) Skills in using performance testing tools are available

Select TWO options.

Question #X4 (1 Point)

TTA-4.8.1 (K2) Explain the reasons for including co-existence testing in a test approach

Which of the following is an example of compatibility testing?

a) Checking if there is a resource conflict between the application being tested and another application
b) Checking if a component from outside the system can be a replacement for an existing component
c) Checking if a loan installment is computed in the same currency as the input data describing the loan size
d) Checking if all modules within a system are written in the same programming language

Select ONE option.