Swedish Software Testing Board (SSTB)
International Software Testing Qualifications Board (ISTQB)

Foundation Certificate in Software Testing Version 2018

Examination Questions 2020-01-25

Time allowed: 1:00
(For non-native English speakers 1:15)

There are 40 questions, each question 1 point
You need 26 points or more to pass

You have to follow directives given to you by the invigilator during the whole exam

Mark your answers in the provided answer sheet. Try to answer all 40 questions. Select one option per question if nothing else indicated. Erase any answer you decide to change and mark your new chosen answer clearly.

You are not allowed to keep the questionnaire, other documents or notes. All papers must be handed back to the invigilator at the end of the exam.

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1.	**A speed control and reporting system has the following characteristics:** If you drive 50 km/h or less, nothing will happen. If you drive faster than 50 km/h, no more than 55 km/h, you will be warned. If you drive faster than 55 km/h but not more than 60 km/h, you will be fined. If you drive faster than 60 km/h, your driving license will be suspended. The speed in km/h is available to the system as an integer value. Which would be the most likely set of values (km/h) identified by applying the boundary value analysis, where only the boundary values on the boundaries of the equivalence classes are relevant? a) 0, 49, 50, 54, 59, 60 b) 49, 50, 54, 55, 60, 62 c) 50, 51, 55, 56, 60, 61 d) 50, 55, 60 Please select exactly 1 option
2.	**A video application has the following requirement:** The application shall allow playing a video on the following display sizes: 1. 640x480. 2. 1280x720. 3. 1600x1200. 4. 1920x1080. Which of the following list of test cases is a result of applying the Equivalence Partitioning test technique to test this requirement? a) Verify that the application can play a video on any one of the display sizes in the requirement (1 test) b) Verify that the application can play a video on each of the display sizes in the requirement (4 tests) c) Verify that the application can play a video on a display of size 640x480 and 1920x1080 (2 tests) d) Verify that the application can play a video on a display of size 1920x1080 (1 test) Please select exactly 1 option

3.	**Which of the following statements is a valid objective for testing?**
	a) To prove that any remaining defects will not cause any failures
	b) To prove that all possible defects are identified
	c) To find as many failures as possible so that defects can be identified and corrected
	d) To determine whether enough component tests were executed within system testing
	Please select exactly 1 option
4.	**Which <u>TWO</u> of the following statements about the relationship between statement coverage and decision coverage are true?**
	a) 50% decision coverage also guarantees 50% statement coverage
	b) Decision coverage can never reach 100%
	c) 100% decision coverage also guarantees 100% statement coverage
	d) Decision coverage is stronger than statement coverage
	e) 100% statement coverage also guarantees 100% decision coverage
	Please select exactly 2 options
5.	**Which of the following BEST describes how tasks are divided between the test manager and the tester?**
	a) The test manager plans and controls the testing activities, while the tester specifies the tests and set up test environment
	b) The test manager plans and organizes the testing and specifies the test cases, while the tester prioritizes and executes the tests
	c) The test manager plans, monitors, and controls the testing activities, while the tester designs tests and decides on the release of the test object
	d) The test manager plans testing activities and chooses the standards to be followed, while the tester chooses the tools and set the tools usage guidelines
	Please select exactly 1 option
6.	**Which one of the following test tools is mostly suitable for developers rather than testers?**
	a) Performance testing tools
	b) Code coverage tools
	c) Configuration management tools
	d) Defect management tools
	Please select exactly 1 option

Test-ID		T1	T2	T3	T4
Condition1	Employment for more than 1 year?	YES	NO	NO	YES
Condition2	Agreed target?	NO	NO	YES	YES
Condition3	Achieved target?	NO	NO	YES	YES
Action	Bonus payment	NO	NO	NO	YES

7. **A company's employees are paid bonuses if they work more than a year in the company and achieve a target which is individually agreed before.**
These facts can be shown in a decision table:

Which of the following test cases represents a situation that can happen in real life, and is missing in the above decision table?

a) Condition1 = NO, Condition2 = YES, Condition3 = NO, Action= NO
b) Condition1 = YES, Condition2 = YES, Condition3 = NO, Action= YES
c) Condition1 = NO, Condition2 = NO, Condition3 = YES, Action= NO
d) Condition1 = YES, Condition2 = NO, Condition3 = YES, Action= NO

Please select exactly 1 option

8. **The following statement refers to decision coverage:**
"When the code contains only a single "if" statement and no loops or CASE statements, any single test case we run will result in 50% decision coverage".
Which of the following sentences is correct?

a) The sentence is false. A single test case can only guarantee 25% decision coverage in this case
b) The sentence is true. Any single test case provides 100% statement coverage and therefore 50% decision coverage
c) The sentence is true. Any single test case would cause the outcome of the "if" statement to be either true or false
d) The sentence is false. The statement is too broad. It may be correct or not, depending on the tested software

Please select exactly 1 option

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9.	**Which of the following lists contains only typical exit criteria from testing?** a) Time to market, remaining defects, tester qualification, available of testable use cases and test cost b) Reliability measures, test coverage, degree of tester's independence, and product completeness c) Reliability measures, test coverage, test cost, schedule and status about fixing errors and remaining risks d) Reliability measures, test coverage, test cost, availability of test environment, time to market, and product completeness Please select exactly 1 option

10.	**The project develops a "smart" heating thermostat.**
	The control algorithms of the thermostat were modeled as Matlab/Simulink models and run on the internet connected server. The thermostat uses the specifications of the server to trigger the heating valves.
	The test manager has defined the following test strategy/approach in the test plan:
	   1. The acceptance test for the whole system is executed as an experience-based test
	   2. The control algorithms on the server are tested during implementation using continuous integration
	   3. The functional test of the thermostat is performed as risk-based testing
	   4. The security tests of data / communication via the internet are executed together with external security experts
	
	What four common types of test strategies/approaches did the test manager implement in the test plan?
	
	a) model-based, methodical, analytical and consultative
	b) methodical, analytical, reactive and regression-averse
	c) analytical, model-based, consultative and reactive
	d) regression-averse, consultative, reactive and methodical
	
	Please select exactly 1 option

11.	**Mr. Test has been testing software applications on mobile devices for a period of 5 years.**
	He has a wealth of experience in testing mobile applications and achieves better results in a shorter time than others. Over several months Mr. Test did not modify the existing automated test cases and did not create any new test cases. This leads to fewer and fewer defects being found by executing the tests.
	What principle of testing did Mr. Test not observed?
	a) Repeating of tests will not find new defects
	b) Defects cluster together
	c) Testing depends on the environment
	d) Exhaustive testing is not possible
	Please select exactly 1 option
12.	**Which TWO of the following statements about static testing are <u>MOST</u> true?**
	a) When testing safety-critical system, static testing has less value because dynamic testing finds the defects better
	b) It makes it possible to find run-time problems early in the lifecycle
	c) It makes dynamic testing less challenging
	d) A cheap way to detect and remove defects
	e) Early validation of user requirements
	Please select exactly 2 options
13.	**Which <u>TWO</u> of the following can affect and be part of test planning?**
	a) Use case
	b) Failure rate
	c) Budget limitations
	d) Test log
	e) Test objectives
	Please select exactly 2 options

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14.	**What is checklist-based testing?**
	a) Procedure to derive and/or select test cases based on an analysis of the specification, either functional or non-functional, of a component or system without reference to its internal structure
	b) A test technique in which tests are derived based on the tester's knowledge of past failures, or general knowledge of failure modes
	c) An experience-based test technique whereby the experienced tester uses a high-level list of items to be noted, checked, or remembered, or a set of rules or criteria against which a product must be verified
	d) An approach to testing where the testers dynamically designs and executes tests based on their knowledge, exploration of the test item and the results of previous tests
	Please select exactly 1 option
15.	**How can white-box testing be applied during acceptance testing?**
	a) To cover all web page navigations
	b) To check if large volumes of data can be transferred between integrated systems
	c) To check if all code statements and code decision paths have been executed
	d) To check if all work process flows have been covered
	Please select exactly 1 option

16.	**As a test manager you are responsible for testing the following requirements:**

R1 - Process anomalies
R2 - Synchronization
R3 - Approval
R4 - Problem solving
R5 - Financial data
R6 - Diagram data
R7 - Changes to the user profile

Notation: Logical requirement dependencies (A -> B means, that B depends on A):
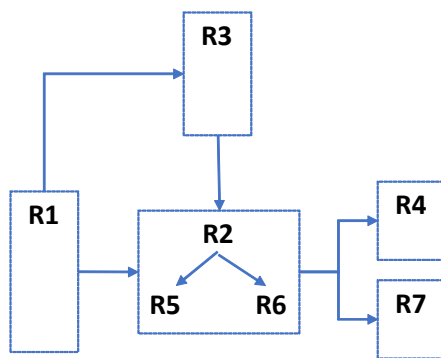
Which one of the following options structures the test execution schedule according to the requirement dependencies?

a) R1 --> R2 --> R5 --> R6 --> R3 --> R4 --> R7
b) R1 --> R3 --> R4 --> R7 --> R2 --> R5 --> R6
c) R1 --> R3 --> R2 --> R4 --> R7 --> R5 --> R6
d) R1 --> R3 --> R2 --> R5 --> R6 --> R4 --> R7

Please select exactly 1 option

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17.	**Which one of the following is <u>TRUE</u>?**
	a) The purpose of regression testing is to check if the correction has been successfully implemented, while the purpose of confirmation testing is to confirm that the correction has no side effects
	b) The purpose of regression testing is to check if the new functionality is working, while the purpose of confirmation testing is to check if the originally defect has been fixed
	c) The purpose of regression testing is to detect unintended side effects, while the purpose of confirmation testing is to check if the system is still working in a new environment
	d) The purpose of regression testing is to detect unintended side effects, while the purpose of confirmation testing is to check if the original defect has been fixed
	Please select exactly 1 option
18.	**You are testing a new version of software for a coffee machine.**
	The machine can prepare different types of coffee based on four categories. i.e. coffee size, sugar, milk and flavor.
	The criteria are as follows:
	● Coffee size (small, medium, large),
	● Sugar (none, 1 unit, 2 units, 3 units, 4 units),
	● Milk (yes or no),
	● Coffee flavor (none, caramel, hazelnut, vanilla).
	You are now writing a defect report with the following information:
	Title: Low coffee temperature.
	Short summary: When you select coffee with milk, the time for preparing coffee is too long and the temperature of the beverage is too low (less than 40 °C)
	Expected result: The temperature of coffee should be standard (about 75 °C).
	Degree of risk: Medium
	Priority: Normal
	What valuable information is <u>**MOST**</u> likely to be omitted in the above defect report?
	a) Data identifying the tested coffee machine
	b) The actual test result
	c) Status of the defect
	d) Ideas for improving the test case
	Please select exactly 1 option

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19.	**Which of the following statements comparing component testing and system testing is <u>TRUE</u>?** a) Component testing verifies the functionality of software modules, program objects, and classes that are separately testable, whereas system testing verifies interfaces between components and interactions between different parts of the system b) Component testing only focuses on functional characteristics, whereas system testing focuses on functional and non-functional characteristics c) Test cases for component testing are usually derived from component specifications, design specifications, or data models, whereas test cases for system testing are usually derived from requirement specifications, or use cases d) Component testing is the responsibility of the testers, whereas system testing typically is the responsibility of the users of the system Please select exactly 1 option
20.	**In what way can testing be part of Quality Assurance?** a) It ensures that standards in the organization are followed b) It measures the quality of software in terms of number of executed test cases c) It ensures that requirements are detailed enough d) It contributes to the achievement of quality in a variety of ways Please select exactly 1 option
21.	**Which one of the following is the description of statement coverage?** a) It is a metric, which is the percentage of statements in the source code that have been executed b) It is a metric, that gives a true/false confirmation if all statements are covered or not c) It is a metric, which is the percentage of test cases that have been executed d) It is a metric, which is the number of statements in the source code that have been executed by test cases that are passed Please select exactly 1 option

22.	**Which of the following metrics would be MOST useful to monitor during test execution?** a) Average number of testers involved in the test execution b) Percentage of executed test cases c) Percentage of test cases already created and reviewed d) Coverage of requirements by source code Please select exactly 1 option
23.	**Which one of the following is the characteristic of a metrics-based approach for test estimation?** a) Average of calculations collected from business experts b) Budget which was used by a previous similar test project c) Overall experience collected in interviews with test managers d) Overall estimate agreed with the developers Please select exactly 1 option
24.	**Which one of the following answers describes a test condition?** a) The degree to which a software product provides functions which meet stated and implied needs when the software is used under specified conditions b) An attribute of a component or system specified or implied by requirements documentation c) The percentage of all single condition outcomes that independently affect a decision outcome that have been exercised by a test case suite d) An aspect of the test basis that is relevant to achieve specific test objectives Please select exactly 1 option
25.	**Which of the following situations is exploratory testing suitable?** a) When testers are available who have enough knowledge of similar applications and technologies b) When time pressure requires speeding up the execution of tests already specified c) When an advanced knowledge of the system already exists, and evidence is to be provided that it should be tested intensively d) When the system is developed incrementally, and no test charter is available Please select exactly 1 option

26.	**An employee's bonus is to be calculated.**
	It cannot be negative, but it can be calculated down to zero.
	The bonus is based on the length of employment.
	The categories are: less than or equal to 2 years, more than 2 years but less than 5 years, 5 or more years, but less than 10 years, 10 years or longer.
	What is the minimum number of test cases required to cover all valid equivalence partitions for calculating the bonus?
	a) 5
	b) 3
	c) 4
	d) 2
	Please select exactly 1 option

27.	**Which of the following should <u>NOT</u> be a trigger for maintenance testing?**
	a) Decision to test the maintainability of the software
	b) Decision to test the system after migration to a new operating platform
	c) Decision to test after "hot fixes"
	d) Decision to test if archived data is possible to be retrieved
	Please select exactly 1 option

28.	**Which one of the following is <u>NOT</u> included in a test summary report?**
	a) Evaluation of the quality of the test item
	b) Deviations from the test approach
	c) Defining pass/fail criteria and objectives of testing
	d) Measurements of actual progress against exit criteria
	Please select exactly 1 option

29.	**You will be invited to a review.**

The work product to be reviewed is a description of the in-house document creation process. The aim of the description is to present the work distribution between the different roles involved in the process in a way that can be clearly understood by everyone.

You will be invited to a checklist-based review. The checklist will also be sent to you. It includes the following points:
  i.   Is the person who performs the activity clearly identified for each activity?
  ii.   Are the entry criteria clearly defined for each activity?
  iii.   Are the exit criteria clearly defined for each activity?
  iv.   Are the supporting roles and their scope of work clearly defined for each activity?

In the following we show an excerpt of the work result to be reviewed, for which you should use the checklist above:

"After checking the customer documentation for completeness and correctness, the software architect creates the system specification. Once the software architect has completed the system specification, he invites testers and verifiers to the review. A checklist describes the scope of the review. Each invited reviewer creates review comments - if necessary - and concludes the review with an official review done-comment."

Which of the following statements about your review is correct?

a) Point i) of the checklist has been violated because it is not clear who is providing the checklist for the invitation to the review

b) Point iii) of the checklist has been violated as it is not clear what marks the review as completed

c) You notice that in addition to the tester and the verifier, the validator must also be invited. Since this item is not part of your checklist, you do not create a corresponding comment

d) Point ii) of the checklist has been violated because it is not clear which condition must be fulfilled in order to invite to the review

Please select exactly 1 option

30.	**Which one of the following is the <u>BEST</u> definition of an incremental development model?**
	a) Defining requirements, designing software and testing are done in phases where in each phase a piece of the system is added
	b) Testing is viewed as a separate phase which takes place after development has been completed
	c) Testing is added to development as an increment
	d) A phase in the development process should begin when the previous phase is complete
	Please select exactly 1 option
31.	**Which activities are carried out within the planning of a formal review?**
	a) Collection of metrics for the evaluation of the effectiveness of the review
	b) Verification of input criteria for the review
	c) Answer any questions the participants may have
	d) Evaluation of the review findings against the exit criteria
	Please select exactly 1 option
32.	**Which of the below tasks is performed during the test analysis activity of the test process?**
	a) Analyzing lessons learned for process improvement
	b) Evaluating the test basis for testability
	c) Creating test suites from test scripts
	d) Identifying any required infrastructure and tools
	Please select exactly 1 option
33.	**Which of the following statements correctly describes the difference between testing and debugging?**
	a) Testing shows failures caused by defects; debugging finds, analyzes, and removes the causes of failures in the software
	b) Testing identifies the source of defects; debugging analyzes the defects and proposes prevention activities
	c) Testing prevents the causes of failures; debugging removes the failures
	d) Testing removes faults; debugging identifies the causes of failures
	Please select exactly 1 option

34. **Which of the following statements about the given state transition diagram and table of test cases is <u>TRUE</u>?**
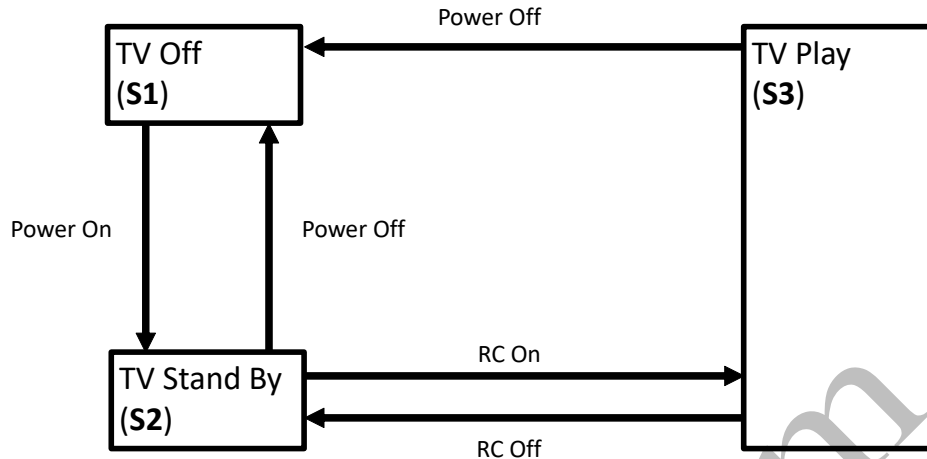
Test Case	1	2	3	4	5
Start State	S1	S2	S2	S3	S3
Input	Power On	Power Off	RC On	RC Off	Power Off
Expected Final State	S2	S1	S3	S2	S1

a) The given test cases represent some of the valid transitions in the state transition diagram
b) The given test cases represent all possible valid transitions in the state transition diagram
c) The given test cases represent pairs of transitions in the state transition diagram
d) The given test cases cover both valid and invalid transitions in the state transition diagram

Please select exactly 1 option

35. **Which of the review types below is the <u>BEST</u> option when the review must follow a formal process based on rules and checklists?**

a) Informal Review
b) Technical Review
c) Inspection
d) Walkthrough

Please select exactly 1 option

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36.	**Which of the following options are roles in a formal review?** a) Author, Moderator, Review leader, Scribe b) Author, Manager, Review leader, Designer c) Developer, Moderator, Review leader, Tester d) Author, Moderator, Manager, Developer Please select exactly 1 option
37.	**Match the following test work products (1-4) with the right description (A-D).** 1. Test suite. 2. Test case. 3. Test script. 4. Test charter. A. A group of test scripts with a sequence of instructions. B. A set of instructions for the execution of a test. C. Contains expected results. D. An instruction of test goals and possible test ideas on how to test. a) 1D, 2C, 3B, 4A b) 1A, 2C, 3D, 4B c) 1D, 2B, 3A, 4C d) 1A, 2C, 3B, 4D Please select exactly 1 option
38.	**Which one of the following is <u>MOST</u> likely to be a benefit of using test execution tools?** a) It is easy to run regression tests b) It is easy to design tests for security testing c) It is easy to create regression tests d) It is easy to maintain version control of test assets Please select exactly 1 option
39.	**Which one of the statements below describes the most common situation for a failure discovered during testing or in production?** a) The wrong version of one source code file was included in the build b) The product crashed when the user selected an option in a dialog box c) The developer misinterpreted the requirement for the algorithm d) The computation algorithm used the wrong input variables Please select exactly 1 option

40.	**Which one of the following options is categorized as a black-box test technique?**
	a) A technique based on analysis of the architecture
	b) A technique based on formal requirements
	c) A technique checking that the test object is working according to the technical design
	d) A technique based on the knowledge of past faults, or general knowledge of failures
	Please select exactly 1 option

Please return this questionnaire and all your notes together with your answer sheet at the end of the examination.