

Note:

- Answers provided in this sheet are all marked in blue.
 - Should be used as reference material for the CSTE Mock Test - Part II.
 - The evaluator needs to check the assumptions made by the participants, so as to give a proper marking to the respective answer.
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1. Define the following along with examples [25 Marks]
- a. Boundary Value testing
 - b. Equivalence testing
 - c. Error Guessing
 - d. Desk checking
 - e. Control Flow analysis

Answer:

1-a) Boundary value Analysis: - A process of selecting test cases/data by identifying the boundaries that separate valid and invalid conditions. Tests are constructed to test the inside and outside edges of these boundaries, in addition to the actual boundary points. or A selection technique in which test data are chosen to lie along "boundaries" of the input domain [or output range] classes, data structures, procedure parameters, etc. Choices often include maximum, minimum, and trivial values or parameters.

E.g. - Input data 1 to 10 (boundary value)
Test input data 0, 1, 2 to 9, 10, 11

1-b) Equivalence testing: - The input domain of the system is partitioned into classes of representative values, so that the no of test cases can be limited to one-per-class, which represents the minimum no. of test cases that must be executed.

E.g.- valid data range: 1-10
Test set:-2; 5; 14

1-c) Error guessing: - Test data selection technique. The selection criterion is to pick values that seem likely to cause errors Error guessing is based mostly upon experience, with some assistance from other techniques such as boundary value analysis. Based on experience, the test designer guesses the types of errors that could occur in a particular type of software and designs test cases to uncover them.

E.g. - For example, if any type of resource is allocated dynamically, a good place to look for errors is in the de-allocation of resources. Are all resources correctly de-allocated, or are some lost as the software executes?

1-d) Desk checking: - Desk checking is conducted by the developer of the system or program. The process involves reviewing the complete product to ensure that it is structurally sound and that the standards and requirements have been met. This is the most traditional means for analyzing a system or program.

1-e) Control Flow Analysis: - It is based upon graphical representation of the program process. In control flow analysis; the program graphs has nodes which represent a statement or segment possibly ending in an unresolved branch. The graph illustrates the flow of program control from one segment to another as illustrated through branches .the objective of control flow analysis is to determine

the potential problems in logic branches that might result in a loop condition or improper processing .

2. You find that there is a senior tester who is making more mistakes than the junior testers. You need to communicate this aspect to the senior tester. Also, you don't want to lose this tester. How should one go about the constructive criticism? [10 Marks]

Answer:

In the quality approach, it is the responsibility of the supervisor to make His/Her subordinates successful. The effective use of criticism is a tool for improving subordinate performance.

In giving constructive criticism, you should incorporate the following tactics: -

- a) Do it privately.
- b) Have the facts.
- c) Be prepared to help the worker improve His/Her performance.
- d) Be specific on Expectations.
- e) Follow a specific process in giving the criticism.

3. Your manager has taken you onboard as a test lead for testing a web-based application. He wants to know what risks you would include in the Test plan. Explain each risk factor that would be a part of your test plan. [20 marks]

Answer:

Web-Based Application primary risk factors:-

- A) Security: anything related to the security of the application.
- B) Performance:- The amount of computing resources and code required by the system to perform its stated functions.
- C) Correctness:-Data entered, processed, and outputted in the system is accurate and complete
- D) Access Control:-Assurance that the application system resources will be protected
- E) Continuity of processing:-The ability to sustain processing in the event problem occurs
- F) Audit Trail:-The capability to substantiate the processing that has occurred.
- G) Authorization:-Assurance that the data is processed in accordance with the intents of the management

General risk or secondary risk's:-

- A) Complex - anything disproportionately large, intricate or convoluted.
- B) New - anything that has no history in the product.
- C) Changed - anything that has been tampered with or "improved".
- D) Upstream Dependency - anything whose failure will cause cascading failure in the rest of the system.
- E) Downstream Dependency - anything that is especially sensitive to failures in the rest of the system.
- F) Critical - anything whose failure could cause substantial damage.
- G) Precise - anything that must meet its requirements exactly.
- H) Popular - anything that will be used a lot.
- I) Strategic - anything that has special importance to your business, such as a

feature that sets you apart from the competition.

J) Third-party - anything used in the product, but developed outside the project.

K) Distributed - anything spread out in time or space, yet whose elements must work together.

L) Buggy - anything known to have a lot of problems.

M) Recent Failure - anything with a recent history of failure.

4. You are in the contract stage of a project and are developing a comprehensive proposal for a safety critical software system. Your director has consulted you for preparing a guideline document what will enlist user's role during acceptance testing phase. Indicate the key roles you feel that the user should play during acceptance stage. Also indicate the categories into which the acceptance requirements should fall. [10 Marks]

Answer:

- 1) Ensure user involvement in developing systems requirement and acceptance criteria.
- 2) Identify interim and final products for acceptance their acceptance criteria and schedule.
- 3) Plan how and by whom each acceptance activity will be performed.
- 4) Plan resources for providing information.
- 5) Schedule adequate time for buyer staff to receive and examine the products and evaluation prior to acceptance review.
- 6) Prepare the acceptance plan.
- 7) Respond to the analysis of project entitles before accepting and rejecting.
- 8) Approve the various interim software products.
- 9) Perform the final acceptance activities, including the formal acceptance testing at delivery.
- 10) Make an acceptance decision for each product.

5. What is parallel testing and when do we use parallel testing? Explain with example?

[5 marks]

Answer:

Testing a new or an altered data processing system with the same source data that is used in another system. The other system is considered as the standard of comparison. OR we can say that parallel testing requires the same input data be run through two versions of the same application.

Parallel testing should be used when there is uncertainty regarding the correctness of processing of the new application. And old and new versions of the applications are same.

E.g.-

- 1) Operate the old and new version of the payroll system to determine that the paychecks from both systems are reconcilable.
- 2) Run the old version of the application system to ensure that the operational status of the old system has been maintained in the event that problems are encountered in the new application.

6. What is the difference between testing Techniques and tools? Give examples.

[5 marks]

Answer:

Testing technique: - Is a process for ensuring that some aspects of the application system or unit functions properly there may be few techniques but many tools.

Tools: - Is a vehicle for performing a test process. The tool is a resource to the tester, but itself is insufficient to conduct testing

E.g.:- The swinging of hammer to drive the nail. The hammer is a tool, and swinging the hammer is a technique. The concept of tools and technique is important in the testing process. It is a combination of the two that enables the test process to be performed. The tester should first understand the testing techniques and then understand the tools that can be used with each of the technique.

7. Quality control activities are focused on identifying defects in the actual products produced; however your boss wants you to identify and define processes that would prevent defects. How would you explain to him to distinguish between QA and QC responsibilities?

[10 Marks]

Answer:

Quality Assurance	Quality Control
A planned and systematic set of activities necessary to provide adequate confidence that requirements are properly established and products or services conform to specified requirements.	The process by which product quality is compared with applicable standards; and the action taken when nonconformance is detected.
An activity that establishes and evaluates the processes to produce the products.	An activity which verifies if the product meets pre-defined standards.
Helps establish processes.	Implements the process.
Sets up measurements programs to evaluate processes.	Verifies if specific attribute(s) are in a specific product or service
Identifies weaknesses in processes and improves them.	Identifies defects for the primary purpose of correcting defects.
QA is the responsibility of the entire team.	QC is the responsibility of the tester.
Prevents the introduction of issues or defects	Detects, reports and corrects defects

- 8) Differentiate between Transaction flow modeling, Finite state modeling, Data flow modeling and Timing modeling?

[10 Marks]

Answer:

Transaction Flow modeling: -The nodes represent the steps in transactions. The links represent the logical connection between steps.

Finite state modeling:-The nodes represent the different user observable states of the software. The links represent the transitions that occur to move from state to state.

Data flow modeling:-The nodes represent the data objects. The links represent the transformations that occur to translate one data object to another.

Timing Modeling:-The nodes are Program Objects. The links are sequential connections between the program objects. The link weights are used to specify the required execution times as program executes.

9) List what you think are the two primary goals of testing [5 Marks]

Answer:

- 1) Determine whether the system meets specifications (producer view)
- 2) determine whether the system meets business and user needs (Customer view)

10) What are all the risk associated with new technology, and how will you mitigate them? – KD 10