**Difference between various Specifications Documents – For Test Design, Test Cases & Test Procedures**

IEEE 829 standard prescribes many specifications related documents. Three such documents are

1) Test Design Specifications  
2) Test Case Specifications  
3) Test Procedure Specifications

Let us go a bit deeper into the salient features of each of these documents being crucially important in any testing effort.

**1) Test Design Specifications:**  
The objective of compiling test design specifications is to identify set of features or a combination of features to be tested and to identify the group of test cases that will adequately test those features. In addition to these it contains all types of refinements done to the approach described in the test plan.

**The test design specification consists of following essential parts:**

**1) Test design specification identifier:**

A unique identifier is to be allocated so that the test design specification document can be distinguished from all other documents.  
**2) Features to be tested:** It describes the test items and the features that are the object of this test design specification.

**3) Approach refinements:** It describes the test techniques to be adopted for this test design.

**4) Test identification:** It describes a comprehensive list of test cases associated with this test design. It provides a unique identifier and a short description for every test case.

**5) Acceptance criteria:**It describes the criteria to confirm as to whether each feature has passed or failed during testing.

**2) Test Case Specifications:**The objective of compiling the test case specifications is to specify in detail each test case listed in the test design specification.

**The test case specification consists of following essential parts:**

**1) Test case specification identifier:** A unique identifier so that this document can be distinguished from all other documents.

**2) Test items:** Identifies the items and features to be tested by the particular test case.

**3) Input specifications:** It describes details of each & every input required by the particular test case.

**4) Output specifications:** It describes each output expected after executing the particular test case.

**5) Environmental needs:** It describes any special hardware, software, facilities, etc. required for the execution of the particular test case that were not listed in its associated test design specification.

**6) Special procedural requirements:** It describes any special setup, execution, or cleanup procedures unique to the particular test case.

**7) Inter-case dependencies:**It describes a comprehensive list of all test cases that must be executed prior to the particular test case.

**3) Test Procedure Specifications:**  
The objective of compiling the test procedure specification is to specify the steps for executing a test case and the process for determining whether the software passed or failed the test.

The test procedure specification consists of following essential parts:

**1) Test procedure specification identifier:** A unique identifier is to be allocated so that the test procedure specification document can be distinguished from all other documents.  
 **2) Objective:** It describes the objective of the test procedure and its corresponding test cases.

**3) Special requirements:** It describes a comprehensive list of all special requirements for the execution of the particular test procedure.

**4) Procedure steps:** It describes a comprehensive list of all steps of the procedure.

Possible steps may consist of the following:

# Set up  
# Start  
# Proceed  
# Measure  
# Shut Down  
# Restart  
# Stop & finally  
# Wind up

**What are the main steps involved in the design of tests?**

The design of tests comprises of three main steps:

**1) Identify test conditions:** Decide on a test condition, which would typically be a small

section of the specification for our software under test.

**Going by the definition – A test condition is some characteristic of our software that we can check with a test or a set of tests.**

**2) Specify test cases:** Design a test case that will verify the test condition.

**Going by the definition – A test case gets the system to some starting point for the test (execution preconditions); then applies a set of input values that should achieve a given outcome (expected result), and leaves the system at some end point (execution postcondition).**

**3) Specify test procedures:** Write a test procedure to execute the test, i.e. get it into the right starting state, input the values, and check the outcome.

Going by the definition – A test procedure identifies all the necessary actions in sequence to execute a test. Test procedure specifications are often called test scripts (or sometimes manual test scripts to distinguish them from the automated scripts that control test execution tools.

This is a simple set of steps. Of course we will have to carry out a very large number of these simple steps to test a whole system, but the basic process is still the same. To test a whole system we write a test execution schedule, which puts all the individual test procedures in the right sequence and sets up the system so that they can be run.

The test development process may be implemented in more or less formal ways. In some situations it may be appropriate to produce very little documentation and in others a very formal and documented process may be appropriate. It all depends on the context of the testing, taking account of factors such as maturity of development and test processes, the amount of time available and the nature of the system under test. Safety-critical systems, for example, will normally require a formal test process.

**Question 10. Given the following sets of test management terms (v-z), and activity descriptions (1-5), which one of the following best pairs the two sets?**

**v – Test control  
w – Test monitoring  
x - Test Estimation  
y - Incident management  
z - Configuration control**

**1 - Calculation of required test resources 2 - Maintenance of record of test results  
3 - Re-allocation of resources when tests overrun 4 - Report on deviation from test plan  
5 - Tracking of anomalous test results**

a) v-3, w-2, x-1, y-5, z-4

b) v-2, w-5, x-1, y-4, z-3

c) v-3, w-4, x-1, y-5, z-2

d) v-2, w-1, x-4, y-3, z-5

**Correct Answer:** c) V-3, w-4, x-1, y-5, z-2

At number 9 we have a question related to Testing Fundamentals. Only 33.9% test takers got it correct

**Question 9. A failure is:**

a) Found in the software; the result of an error.

b) Departure from specified behavior

c) An incorrect step, process or data definition in a computer program

d) A human action that produces an incorrect result

**Correct Answer:** b) Departure from specified behavior.

At number 8 we have a question related to Testing Types. Only 33% test takers got it correct

**Question 8. Drivers are also known as:**

**i. Spade  
ii. Test harness  
iii. Scaffolding**

a) i, ii are true and iii is false

b) i , iii are true and ii is false

c) ii, iii are true and i is false

d) All of the above are true

**Correct Answer:** c) ii, iii are true and i is false

At number 7, again we have a question from Testing Fundamentals. Only 31% test takers got it correct

**Question 7. Verification involves which of the following: - i. Helps to check the Quality of the built product  
ii. Helps to check that we have built the right product.  
iii. Helps in developing the product  
iv. Monitoring tool wastage and obsoleteness.**

a) i,ii,iii,iv are true.

b) i is true and ii,iii,iv are false

c) i,ii,iii are true and iv is false

d) ii is true and i,iii,iv are false

**Correct Answer:** b) i is true and ii,iii,iv are false.

**Tip**: 'Validation' - Helps to check the Quality of the built product

At number 6, we have question from Testing Techniques. Only 30.7% test takers got it correct

**Question 6. In a system designed to work out the tax to be paid: An employee has $4000 of salary tax free. The next $1500 is taxed at 10%, The next $28000 is taxed at 22% Any further amount is taxed at 40%, Which of these groups of numbers would fall into the same equivalence class?**

a) $4800; $14000; $28000

b) $5200; $5500; $28000

c) $28001; $32000; $35000

d) $5800; $28000; $32000

**Correct Answer:** d) $5800; $28000; $32000

At number 5, again we have question from Testing Techniques Only 23.67% test takers got it correct

**Question 5. Given the Following program**

**IF X = Z**

**THEN Statement 2;**

**END**

**McCabe's Cyclomatic Complexity is:**

a) 2

b) 3

c) 4

d) 5

**Correct Answer:** b) 3

Number 4 is occupied by a question from Testing Techniques. Only 23% test takers got it correct

**Question 4. Which of the following statements about reviews is false?**

a) Reviews cannot be performed on user requirements specifications

b) Reviews are the least effective way of testing code

c) Reviews are unlikely to find faults in test plans.

d) Reviews should be performed on specifications, code, and test plans

**Correct Answer:** b) Reviews are the least effective way of testing code

Testing Techniques seems to be ruling this list! Only 22% got this question correct

**Question 3. An input field takes the year of birth between 1900 and 2004.The boundary values for testing this field are:**

a) 0,1900,2004,2005

b) 1900, 2004

c) 1899,1900,2004,2005

d) 1899, 1900, 1901,2003,2004,2005

**Correct Answer:** d) 1899, 1900, 1901,2003,2004,2005

At #2, we have a question from Testing Tools. Only 17% of test takers got it correct

**Question 2. Which of these activities provides the biggest potential cost saving from the use of CAST?**

a) Test management

b) Test design

c) Test Execution

d) Test planning

**Correct Answer:** c) Test Execution

**Tip**: CAST = Computer Aided Software Testing

The grand daddy of all is a question from Testing Fundamentals. Only a small 14% of test takers got it correct

**Question 1. Match every stage of the software Development Life cycle with the Testing Life cycle:**

**i. Hi-level design  
ii. Code  
iii. Low-level design  
iv. Business requirements**

**a. Unit tests  
b. Acceptance tests  
c. System tests  
d. Integration tests**

a) i-d , ii-a , iii-c , iv-b

b) i-c , ii-d , iii-a , iv-b

c) i-b, ii-a , iii-d , iv-c

d) i-c, ii-a , iii-d , iv-b

**Correct answer:** d) i-c , ii-a , iii-d , iv-b