

ISO 9001:2008 Certified Institute

**JAVA INSTITUTE FOR ADVANCED TECHNOLOGY**

Department of Examinations



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| COURSE(S) – (LEADING TO) | PROFESSIONAL HIGHER DIPLOMA IN SOFTWARE ENGINEERING |
| ASSIGNMENT STARTING DATE | 05th May 2020 |
| ASSIGNMENT CLOSING DATE | 12th May 2020 |
| UNIT NAME | SOFTWARE ENGINEERING II (SOFTWARE TESTING, QUALITY ASSURANCE AND MAINTENANCE) |
| UNIT ID | HF2W 04 |
| ASSIGNMENT ID | HF2W 04/AS/03 |
| DESCRIPTION | Software test life cycle |
| DURATION | 1 WEEKS |

**GUIDE LINES FOR CANDIDATES**

Students should describe step by step testing process which has specific steps to be executed in a definite sequence to ensure that the quality goals have been met. And student will understand each activity is carried out in a planned and systematic way.

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| NAME : | KANDAGE DON ISHAN VIHANGA VIMUKTHI  .................................................................................................................................... (BLOCK CAPITALS) |
| NIC : | 960263812v  .................................................................................................................................... |
| SCN NO : | 177646148  .................................................................................................................................... |

Java Institute for Advanced Technology Sri Lanka

1. What is the test planning and explain it major task? [20 marks]

A TEST PLAN is a document describing software testing scope and activities. It is the basis for formally testing any software/product in a project.

test plan: A document describing the scope, approach, resources and schedule of intended test activities. It identifies amongst others test items, the features to be tested, the testing tasks, who will do each task, degree of tester independence, the test environment, the test design techniques and entry and exit criteria to be used, and the rationale for their choice,and any risks requiring contingency planning. It is a record of the test planning process.

master test plan: A test plan that typically addresses multiple test levels.

phase test plan: A test plan that typically addresses one test phase.

1. What are the components should be covered in a software test plan. When Test Documentation?[15 marks]

Master Test Plan : A single high-level test plan for a project/product that unifies all other test plans.

Testing Level Specific Test Plans : Plans for each level of testing.

Unit Test Plan

Integration Test Plan

System Test Plan

Acceptance Test Plan

Testing Type Specific Test Plans : Plans for major types of testing like Performance Test Plan and Security Test Plan.

1. What should a test plan test? [10 marks]

A **TEST PLAN** is a detailed document that describes the test strategy, objectives, schedule, estimation and deliverables and resources required for testing. Test Plan helps us determine the effort needed to validate the quality of the application under test. The test plan serves as a blueprint to conduct software testing activities as a defined process which is minutely monitored and controlled by the test manager.

Let’s start with following scenario

In a meeting, you want to discuss the Test Plan with the team members, but they are not interested - .



In such case, what will you do? Select your answer as following figure



 A) I am Manager do everything as I said  
  
 B) OK, let's me explain why we need a Test Plan

1. What are the major tasks Test implementation and execution? [15 marks]

Finalizing, implementing and prioritizing test cases

* including the identification of test data

Developing and prioritizing test procedures

* creating test data
* preparing test harnesses (optionally)
* writing automated test scripts (optionally)

Creating test suites from the test procedures for efficient test execution.

Verifying that the test environment has been set up correctly.

Verifying and updating bi-directional traceability between the test basis and test cases.

Executing test procedures

* manually
* using test execution tools
* according to the planned sequence

Logging the outcome of test execution and recording the identities and versions of the software under test, test tools, and testware.

Comparing actual results with expected results.

Reporting discrepancies as incidents and analyzing them in order to establish their cause.

* defect in the code
* defect in specified test data
* defect in the test document
* mistakes in the way the test was executed

Repeating test activities as a result of action taken for each discrepancy

* re-execution of a test that previously failed in order to confirm a fix (confirmation testing)
* execution of a corrected test and/or execution of tests in order to ensure that defects have not been introduced in unchanged areas of the software or that defect fixing did not uncover other defects (regression testing)

1. What is successful test? [05 marks]

A successful test provides following goals:

1) Detect maximum bugs

2) Deliver the s/w or system meeting all the specified requirements

3) User satisfaction

4) Quality s/w delivery

5) Risk related to software or system are reduced which can lead to system failure and also prevents major loss to organization developing s/w.

1. What is the difference between verification and validation? [05 marks]

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| ***Verification*** | ***Validation*** |
| *1.***Verification** is a static practice of verifying documents, design, code and program. | 1. **Validation** is a dynamic mechanism of validating and testing the actual product. |
| *2.*It does not involve executing the code. | 2. It always involves executing the code. |
| *3.*It is human based checking of documents and files. | *3.*It is computer based execution of program. |
| *4.***Verification** uses methods like inspections, reviews, walkthroughs, and Desk-checking etc. | *4.***Validation** uses methods like black box (functional)  testing, gray box testing, and white box (structural) testing etc. |
| 5. **Verification**is to check whether the software conforms to specifications. | 5. **Validation** is to check whether software meets the customer expectations and requirements. |
| *6.*It can catch errors that validation cannot catch. It is low level exercise. | *6. It can catch errors that verification cannot catch. It is High Level Exercise.* |
| 7. Target is requirements specification, application and software architecture, high level, complete design, and database design etc. | *7.*Target is actual product-a unit, a module, a bent of integrated modules, and effective final product. |
| 8. **Verification** is done by QA team to ensure that the software is as per the specifications in the SRS document. | *8.****Validation****is carried out with the involvement of testing team.* |
| 9. It generally comes first-done before validation. | *9.*It generally follows after **verification**. |

1. Explain the entry criteria of test. [10 marks]

Entry criteria is a set of tests to make sure that the Application Under Test (AUT) is eligible for further testing. This also ensures that all the things expected from the dev team like unit testing reports, release notes etc are made available to the testing team. From a testing team it is mostly expected that test cases should be reviewed and readily available for execution. Actual testing begins once the entry criteria(s) is/are satisfied. Entry criteria further ensure that testing team does not spend time on an application that is not suitable for testing by identifying major flaws early.

1. Write down steps to create a test plan. [05 marks]

Product Analysis

Designing test strategy

Interpret test objectives

Outline test criteria

Planning Resources

Define test Environment

Estimation and Scheduling

Govern test deliverables

1. What is the Test Environment? [05 marks]

A testing environment is a setup of software and hardware for the testing teams to execute test cases. In other words, it supports test execution with hardware, software and network configured.

Test bed or test environment is configured as per the need of the Application Under Test. On a few occasion, test bed could be the combination of the test environment and the test data it operates.

Setting up a right test environment ensures software testing success. Any flaws in this process may lead to extra cost and time

1. Explain exit criteria of test. [10 marks]

Exit criteria(s) is/are certain checkpoints that ensure that a software is production ready and can be released. The criteria may include following:

Accepted level of test coverage

Test case execution report(s)

Bug Report, Summary Reports(s), Status Report(s) etc.

No Showstopper or C1/P1 bug.

No Open item(s): This may differ from project to project.

Acceptance tests passed.