**UNIT-III**

* **System and Acceptance Testing**
* **System Testing Overview**

The testing conducted on the complete integrated products and solutions to evaluate system compliance with specified requirements on functional and non-functional aspects is called system testing.

On the non-functional side, system brings in different testing types, some of which are as follows.

1. performance/load testing
2. scalability testing
3. reliability testing
4. stress testing
5. interoperability testing
6. localization testing

* **Why is System Testing Done?**

System Testing is done for the following reasons.

1. Provide independent perspective in testing
2. Bring in customer perspective in testing
3. Provide a “fresh pair of eyes” to discover defects not found earlier by testing
4. Test product behavior in a holistic, complete, and realistic environment
5. Test both functional and non-functional aspects of the product
6. Build confidence in the product
7. Analyze and reduce the risk of releasing the product
8. Ensure all requirements are met and ready the product for acceptance testing

* **Functional versus Non-functional Testing**
* **Functional System Testing**
* As functional testing is performed at various testing phases, there are two obvious problems.
* One is duplication and other one is gray area.

Some of the common techniques are given below.

1. Design/architecture verification
2. Business vertical testing
3. Beta testing
4. Certification, standards and testing for compliance.

* **Non-Functional System Testing**

Functional testing is a [quality assurance](http://en.wikipedia.org/wiki/Quality_assurance) (QA) process and a type of [black box testing](http://en.wikipedia.org/wiki/Black_box_testing) that bases its test cases on the specifications of the software component under test.

Functions are tested by feeding them input and examining the output, and internal program structure is rarely considered (not like in [white-box testing](http://en.wikipedia.org/wiki/White-box_testing)). Functional Testing usually describes what the system does.

Functional testing differs from [system testing](http://en.wikipedia.org/wiki/System_testing) in that functional testing "[verifies](http://en.wikipedia.org/wiki/Verification_and_validation_(software)) a program by checking it against ... design document(s) or specification(s)", while system testing "[validate[s]](http://en.wikipedia.org/wiki/Verification_and_validation_(software)) a program by checking it against the published user or system requirements" ( Kenner, Falk, Nguyen 1999, p. 52).

* **Scalability testing**
* It is a type of non-functional testing.
* It is a type of [software testing](http://istqbexamcertification.com/what-is-a-software-testing/) that test the ability of a system, a network, or a process to continue to function well, when it is changed in size or volume in order to meet a growing need.
* It is the testing of a software application for measuring its capability to scale up in terms of any of its non-functional capability like load supported, the number of transactions, the data volume etc.
* **Reliability testing**
* Reliability Testing is about exercising an application so that failures are discovered and removed before the system is deployed. The purpose of reliability testing is to determine product reliability, and to determine whether the software meets the customer’s reliability requirements.
* Stress testing (software)
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* **Stress Testing**

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[Stress testing](http://en.wikipedia.org/wiki/Stress_testing) is a [software testing](http://en.wikipedia.org/wiki/Software_testing) activity that determines the [robustness of software](http://en.wikipedia.org/wiki/Robustness_of_software) by testing beyond the limits of normal operation.

Stress testing is particularly important for "[mission critical](http://en.wikipedia.org/wiki/Mission_critical)" software, but is used for all types of software.

Stress tests commonly put a greater emphasis on robustness, [availability](http://en.wikipedia.org/wiki/Availability), and [error handling](http://en.wikipedia.org/wiki/Error_handling) under a heavy load, than on what would be considered correct behavior under normal circumstances.

# Interoperability Testing

Interoperability testing involves testing whether a given software program or technology is compatible with others and promotes cross-use functionality.

This kind of testing is now important as many different kinds of technology are being built into architectures made up of many diverse parts, where seamless operation is critical for developing a user base.

* **Acceptance testing**
* After the system test has corrected all or most defects, the system will be delivered to the user or customer for acceptance testing.
* Acceptance testing is basically done by the user or customer although other stakeholders may be involved as well.
* The goal of acceptance testing is to establish confidence in the system.
* Acceptance testing is most often focused on a validation type testing.
* Acceptance testing may occur at more than just a single level, for example:
  + A Commercial Off the shelf (COTS) software product may be acceptance tested when it is installed or integrated.
  + Acceptance testing of the usability of the component may be done during component testing.
  + Acceptance testing of a new functional enhancement may come before system testing.
* **Summary of Testing Phases**

The purpose of this section is to summarize all the phases of testing and testing types.

**ONE MARK QUESTIONS**

1. ------------------is the only phase of testing which test the both functional and non functional aspects of the product
2. **System testing** b. black box testing c. white box testing d. none
3. A testing that requires enormous amount of resource to find out the maximum capability of the system parameters is-----------------
4. **Scalability testing** b. load testing c. performance testing d. a and c
5. Testing conducted to verify that the localization product works in different languages is------------
6. **Localization testing** b. load testing c. stress testing d. none
7. --------------- involves testing a products functionality and features
8. **Functional testing** b. non functional c. a and b d. none
9. ---------------testing is performed to verify the quality
10. **Non-functional** b. functional c. a and b d. none
11. ------------------ is the final phase before product delivery
12. **System testing** b. beta testing c. functional d. non functional
13. One of the mechanisms used is sending the product that is under test to the customers and receiving the feedback is ---------------------
14. **Beta testing** b. system testing c. stress testing d. none
15. ------------------- is conducted after the release of the product by utilizing the resources and setup available in customers location
16. **Deployment testing** b. beta testing c. system testing d. none
17. --------------- is another critical factor in non functional testing
18. Coming up with entry b. exit criteria c. **a and b** d. none
19. --------------------is to find out the maximum capability of the product parameters
20. **Scalability testing**  b. reliability testing c. stress testing d. none
21. The reliability of a product should not be confused with --------------- testing
22. **Reliability** b. scalability c. system d. none
23. --------------- is to evaluate a system beyond the limits of specified requirements to ensure that system does not break
24. **Stress testing** b. beta testing c. system testing d. none
25. ---------------testing is done to ensure the two or more products can exchange information , use information and work properly together
26. **Interoperability** b. domain c. stress d. system
27. ----------------- is a phase after system testing that is normally done by the customers
28. **Acceptance testing** b. system testing c. beta testing d. none
29. SLA stands for-----------------
30. **Service Level Agreements** b. system level agreement c. system level acceptance d. none
31. To summarize all phases of testing and testing types is------------------
32. **Summary of testing** b. test cases c. test criteria d. none
33. --------------------test cases that make use of customer real life date are included for acceptance testing
34. **Acceptance test data** b. selecting test case c. a and b d. none
35. ----------------test that verify the basic existing behavior of the product are included
36. **Basic sanity test** b. acceptance test c. domain test d. system test
37. When a message is passed on from a system A to system B is-----------------
38. **Communication and messages** b. communication c. message d. none
39. MTTR stands for----------------
40. **Mean Time to recover** b. mode time to recover c. median time to recover d. none

**ANSWER THE FOLLOWING QUESTIONS**

5 MARKS

1. What is system testing?
2. What is functional testing?
3. Write about scalability testing?
4. What is stress testing?
5. What is acceptance testing?

8 MARKS

1. Write about system testing overview?
2. Explain why is system testing done?
3. Brief Explain functional testing?
4. Explain beta testing?
5. Explain Acceptance criteria?