**MANUAL CONCEPTS**

**Why testing is required?**Testing is required for an effective performance of software application or product. It's important to ensure that the application should not result into any failures because it can be very expensive in the future or in the later stages of the development

**What types of application we test**

web applications

desktop/windows applications

Mobile applications

Web services (SOAP/REST)

ETL jobs, database validations

Back end/batch programs/windows services

**what is SDLC and different phases in SDLC?** **what tester will do in each phase of SDLC?**

Software development life cycle (SDLC) is a process to develop the application

Different phases like:

**Requirement Analysis and planning**: Senior team members analyze the requirements/input given by customers/business users. They will check whether the requirement is feasible or not (can be done or not). They also identify the risks associated with project.

Note: this high-level requirement will be written in BRD (Business Requirement document) by Business Analyst

**Define/Design**: in the define stage Business Analyst define more details about requirements (which are in BRD) in the form of SRS (software requirement specification) or Use Case diagram.

As part of design,

Senior Developers write High Level Design Document (HLD)

Developers write Low Level Design Document (LLD)

Seniors Tester write Test Planning document

**Implementation/Development:** Developers write the code for the requirements

Testers write test cases as per SRS

**Testing:** Execute the test cases what we prepared in previous stage

**Deployment:** Release the tested code to production

**Maintenance:** Support team monitoring the system that is running in production

**what is waterfal in SDLC?**

Waterfall model is a sequential model divided into different phases of software development activity. Each stage is designed for performing specific activity during SDLC phase. Testing phase in waterfall model starts only after implementation of the system is done.

Testing is done within the SDLC.

**what is the process in agile model**

AGILE methodology is a practice that promotes continuous iteration of development and testing throughout the software development lifecycle of the project. Both development and testing activities are concurrent unlike the Waterfall model.

In agile testing when an iteration end, shippable features of the product is delivered to the customer. New features are usable right after shipment. It is useful when you have good contact with customers.

**what is scrum methodology**

It is the most popular agile framework, which concentrates particularly on how to manage tasks within a team-based development environment. Scrum uses iterative and incremental development model, with shorter duration of iterations. Scrum is relatively simple to implement and focuses on quick and frequent deliveries.

**what is daily standup meeting and what we discuss**

Whole team from developers to testers will be gathered as the first thing in morning and inform the work performed yesterday and what will be doing that particular day.

**what is user story/feature/sprint back log items and tasks in user story**BSA(BA) discuss with the product owner and gather the requirement and prepare user story then divide the work into sprints and work on it.

**what is sprint planning and spring retro?  
Sprint Planning:** work that can be completed in that particular sprint, there are ready to be done (low defect that is not blocking the function) and done (if low defects can be sent then we call it done) in work.

**Sprint retro:** In the last week of sprint, sprint retro meeting is done where reviews are taken by scrum master and discuss what all changes have to be made in next sprint.

**what is burndown chart and velocity?**

**Burndown Chart:** Team effort in completing the sprint work.  
This chart provides an actual forecast for all the work to be completed, plotting progress over time.

**Velocity:** This chart provides an actual forecast for all the work to be completed, plotting progress over time.

**what is product backlog item and sprint backlog items?  
Product backlog:** requirements given by the product owner to BSA.  
**Sprint backlog:** requirements of the product owner that can be achieved in that particular sprint, and the work not completed in that particular sprint will be sent into product backlog.

**what is user acceptance criteria test cases?**

**what is v model?**V- model is an extension of the waterfall model. Unlike waterfall model, In V-model, there is a corresponding testing phase for each software development phase. Testing in V-model is done in parallel to SDLC stage.

Testing is done as a sub project of SDLC.

**what is STLC?**

STLC is Software Testing Life Cycle. It consists of series of activities carried out by Testers methodologically to test your software product.

Though STLC uses the term “testing” it does not involve just testers, at some instances, they have to involve developers as well.

**what is defect?**When a tester executes the test cases, they might come across the test result which is contradictory to expected result. This variation in the test result is referred as a Software Defect. These defects or variation are referred by different names in a different organization like issues, problem, bug or incidents.

**how to arise a defect and what we specify while logging defect?**

Once defect is found you would follow the step

a) Recreate the defect

b) Attach the screen shot

c) Log the defect

**defect lifecycle**Defect Life Cycle or Bug Life Cycle is the specific set of states that a Bug goes through from discovery to defect fixation.  
  
1.Tester finds the defect

2.Status assigned to defect- New

3.Defect is forwarded to Project Manager for analyze

4.Project Manager decides whether defect is valid

5.Here the defect is not valid- status given "Rejected."

6.So, project manager assigns a status rejected. If the defect is not rejected then the next step is to check whether it is in scope. Suppose we have another function- email functionality for the same application, and you find a problem with that. But it is not a part of the current release then such defects are assigned as a postponed or deferred status.

7.Next, manager verifies whether a similar defect was raised earlier. If yes defect is assigned a status duplicate.

8.If no the defect is assigned to the developer who starts fixing the code. During this stage, the defect is assigned a status in- progress.

9.Once the code is fixed. Defect is assigned a status fixed

10.Next the tester will re-test the code. In case, the test case passes the defect is closed. If the test cases fails again, the defect is re-opened and assigned to the developer.

**Different types of testing:**

Functional testing  
Non-functional testing  
Maintenance testing

**What is unit testing?**

**Mostly done by developers**

Unit testing of software applications is done during the development (coding) of an application.

The objective of unit testing is to isolate a section of code and verify its correctness. In procedural programming a unit may be an individual function or procedure.

**when do we use regression testing?**

After the software, has changed or when the environment has changed Regression testing should be performed.

**What is integration testing?**

Integration testing is a level of software testing process, where individual units of an application are combined and tested. It is usually performed after unit and functional testing.

**when do we use integration testing?**

Integration testing is an approach where modules are developed and testing of modules always starts at the finest level of the programming hierarchy and continues towards the lower levels. It’s the extension to unit testing. Integration testing takes smaller unit of unit testing and tests their behavior as the whole.

**when do we use smoke testing and sanity testing?**

**Smoke Testing:** Testing technique which examines all the basic components of a software system to ensure that they work properly. Typically, smoke testing is conducted by the testing team, immediately after a software build is made.

**Sanity Testing:** Testing technique which determines if a new software version is performing well enough to accept it for a major testing effort. It is performed by the testing teams.

**what is UAT?**

User Acceptance Testing (UAT) involves running a product through a series of specific tests which determines whether the product will meet the needs of its users.

**what is alpha and beta testing?**

**Alpha Testing:** Type of testing a software product or system conducted at the developer's site. Usually it is performed by the end.

**Beta Testing:** Final testing before releasing application for commercial purpose. It is typically done by end-users or others.

**when do we use white box testing and block box testing?**

**Black box Testing:** A method of software testing that verifies the functionality of an application without having specific knowledge of the application's code/internal structure. Tests are based on requirements and functionality. It is performed by QA teams.

**White box Testing:** Testing technique based on knowledge of the internal logic of an application's code and includes tests like coverage of code statements, branches, paths, conditions. It is performed by software developers.

**what we will do if we don’t have a time to test all stories?**

Only after efforts are considered estimation is done so this point is the least scenario and if in case we face such scenario then the work will be sent back to product backlog.

**what we will do if come across any critical severity issue before release day?**

After checking it on qa env we push it to the prod env where we check it again and then we let the end users use it and review before we release so, there is no chance of missing any severe bug

If in case it happens then

WE explain the situation to client and ask some more time to fix the bug.If the client is not ready to give some some time then analyze the impact of defect/bug and try to find workarounds for the defect and mention these issues in the release notes as known issues or known limitations or known bugs. Here the workaround means remedy process to be followed to overcome the defect effect.

Normally this known issues or known limitations(defects) will be fixed in next version or next release of the software

**when do we use automation testing?**

If we need to run the test cases a lot number of times in a test cycle, automation testing is what we should be looking at. Repeatability is not a time consuming activity when we consider automation.

**difference between load and performance testing?**

**Load Testing:** Testing technique that puts demand on a system or device and measures its response. It is usually conducted by the performance engineers.  
**Performance Testing:** Functional testing conducted to evaluate the compliance of a system or component with specified performance requirements. It is usually conducted by the performance engineer.

**different types of non-functional testing types?**

Types of nonfunctional testing are:  
Performance testing  
Endurance testing  
Load testing  
Volume testing  
Scalability testing  
Usability testing

**what is test case?**

Test case is set of predefined functions put together.

input values, execution preconditions, expected results and execution

post conditions, developed for a particular objective or test conditions, such as to exercise a particular program path or to verify compliance with a specific requirement.

**what is test planning/test strategy document**

test plan document is prepared by the test lead, it contains the contents like introduction, objectives, test strategy, scope, test items, program modules user

procedures, features to be tested features not to tested approach, pass or fail criteria, testing process, test deliverables, testing, tasks, responsibilities, resources, schedule

, environmental requirements, risks & contingencies, change management procedures, plan approvals etc all these things help a test manager understand the testing he should do &

what he should follow for testing that particular project.

**what is TDD and BDD (cucumber framework)**

**Test-driven development (TDD**) is a software development process that relies on the repetition of a very short development cycle: first the developer writes an (initially failing) automated test case that defines a desired improvement or new function, then produces the minimum amount of code to pass that test, and finally refactors the new code to acceptable standards. Kent Beck, who is credited with having developed or ‘rediscovered’ the technique, stated in 2003 that TDD encourages simple designs and inspires confidence

**behavior-driven development** is a software development process based on test-driven development (TDD). Behavior-driven development combines the general techniques and principles of TDD with ideas from domain-driven design and object-oriented analysis and design to provide software development and management teams with shared tools and a shared process to collaborate on software development.

**what is priority and severity in defect?** Severity: which describes the impact of the defect on the application

Importance of the defect w.r.t customer requirement"

Priority: which is related to defect fixing urgency. Severity Priority could be High/Medium/Low based on the impact urgency at which the defect should be fixed respectively.

Severity means "Seriousness of the defect w.r.t functionality"

**how to estimate test cases?**

**3-Point Software Testing Estimation Technique:**

3-Point Software Testing Estimation Technique is based on statistical methods in which each testing task is broken down into sub tasks and then three types on estimation are done on each tasks.

The formula used by this technique is:

Test Estimate = P + (4\*N) + E / 6

Whereas P = Positive Scenarios or Optimistic Estimate (Best case scenario in which nothing goes wrong and all conditions are optimal.)

N = Negative Scenarios or Most Likely Estimate (most likely duration and there may be some problem but most of the things will go right.)

E = Exceptional Scenarios or Pessimistic Estimate (worst case scenario which everything goes wrong.)

Standard deviation for the technique is calculated as,

Standard Deviation (SD) = (N – E)/6

**Use – Case Point Method:**

Use-Case Point Method is based on the use cases where we calculate the un-adjusted actor weights and un-adjusted use case weights to determine the software testing estimation.

Use case is a document which well specifies different users, systems or other stakeholders interacting with the concerned application. They are named as ‘Actors’. The interactions accomplish some defined goals protecting the interest of all stakeholders through different behavior or flow termed as scenarios.

The formula used for this technique is:

Un adjusted actor weights = total no. of actors (positive, negative and exceptional)

Un adjusted use case weight = total no. of use cases.

Un adjusted use case point = Un adjusted actor weights + Un adjusted use case weight

Determine the technical/environmental factor (TEF) ( if not available take as 0.50)

Adjusted use case point = Unadjusted use case point \* [0.65+ (0.01 \* TEF]

Total Effort = Adjusted use case point \* 2

**Work Breakdown Structure:**

It is created by breaking down the test project into small pieces. Modules are divided into sub-modules. Sub modules are further divided into functionalities and functionalities are divided in sub-functionalities.

Review all the requirements from Requirement Document to make sure they are added in WBS. Now you figure out the number of tasks your team needs to complete. Estimate the duration of each task.

**Wideband Delphi technique:**

Same as above WBS, In Wideband Delphi Method, work breakdown structure is decomposed for each task and is distributed to a team comprising of 3-7 members for re-estimating the task. The final estimate is the result of the summarized estimates based on the team consensus. This method speaks more on experience rather than any statistical formula. This method was popularized by Barry Boehm to emphasize on the group iteration to reach to a consensus where the team visualized on the different aspects of the problems while estimating the test effort.

**what is most challenge defect u came across?**Changing XPATHS' between testing server and production server­by keeping

generic xpath  
when they are dynamic they keep changing and tests fail so we need to keep a track of it

Keep separate property files for production and UAT

automating flash apps

**how to deal the production defects?**

normally end user will report this issue.

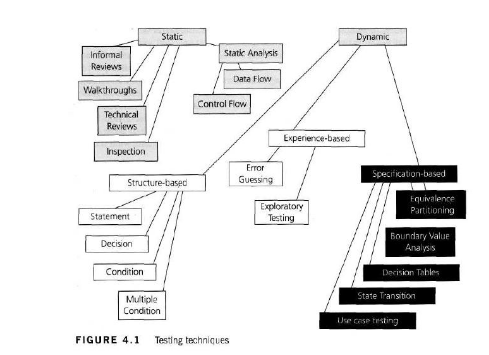
we need to talk to them (end users) and reproduce the issue with in staging environment

Create defect in defect tool under the production release version developers will fix the issue

we (QA) test the issue on production version code (stageing) and release the fix to proudction after we verify

we have to create a defect on current sprint/release so that developer will add this code to the current sprint/release

**test design techniques:**

There are two main categories of Test Design Techniques. They are:  
Static Techniques  
Dynamic Techniques  
  


**if we don’t have time to test call test cases what we will do**

**We create a new story of that test case and move it to the next sprint**

**how we learn the functionality of system?**

Functionality testing is performed to verify that a software application performs and functions correctly according to design specifications. During functionality testing we check the core application functions, text input, menu functions and installation and setup on localized machines, etc.  
Functionality testing verifies that an application is still fully functional after localization. Even applications which are professionally internationalized according to world-readiness guidelines require functionality testing.

**what are the tools to manage defects/stories?**

Jira/Bugzilla  
HP ALM Quality center

**who will assign the work?**

Team Lead

**what is traceability matrix?**

The relationship between test cases and requirements is shown with the help of a document. This document is known as traceability matrix.

**what are typical environments we have in projects**

QA and INT environments and then push it to prod env

**what are different defect metrics and measurements we prepare and types of test metrics we use normally?**

Defect metrics:  
Total no. of defects identified  
Critical defect count  
High defect count  
Medium Defect count  
Low defect count

%ge Test Cases Executed = (No. of Test cases executed / Total no. of Test cases written) \* 100.  
%ge Test cases not executed = (No. of Test cases not executed / Total no. of Test cases written) \* 100.

%ge Test Cases Passed = (No. of Test Cases Passed / Total no. of Test Cases Executed) \* 100.

%ge Test Cases Failed = (No. of Test Cases Failed / Total no. of Test Cases Executed) \* 100.

%ge Test Cases Blocked = (No. of Test Cases Blocked / Total no. of Test Cases Executed) \* 100.

No. of Defects identified / size

(No. of Defects found during QA testing / (No. of Defects found during QA testing +No. of Defects found by End user)) \* 100

Defect Leakage = (No. of Defects found in UAT / No. of Defects found in QA testing.) \* 100

%ge Critical Defects = No. of Critical Defects identified / Total no. of Defects identified \* 100

%ge High Defects = No. of High Defects identified / Total no. of Defects identified \* 100

%ge Medium Defects = No. of Medium Defects identified / Total no. of Defects identified \* 100

%ge Low Defects = No. of Low Defects identified / Total no. of Defects identified \* 100

**What is staging environment**

A stage or staging environment is an environment for testing that exactly resembles the production environment. In other words, it's a complete but independent copy of the production environment, including the database. Staging provides a true basis for QA testing because it precisely reproduces what is in production. A well-implemented staging environment makes it possible to define the important standards and test those accurately.

**what is development environment**

A Development environment is where you configure, customize, and use source control to build an image of the application to be promoted to another environment. You also write an upgrade procedure in this environment that you follow in each target environment**.**

**what is QA environment**

A QA environment is where you test your upgrade procedure against data, hardware, and software that closely simulate the Production environment and where you allow intended users to test the resulting application.

**what is production environment**

Production environment is a term used mostly by developers to describe the setting where software and other products are actually put into operation for their intended uses by end users.