BASIC TESTING QUESTIONS

WHAT IS RATIONAL UNIFIED PROCESS?

RUP is a Software Engineering Process. It is a disciplined approach to assigning tasks, roles and responsibilities within a development environment.
*RUP identifies the static and dynamic aspects of an SDLC. The static aspects are called the **Workflows** and the dynamic aspects are called **Phases**.*
The various Phases are Inception, Elaboration, Construction, and Transition.
The 9 Workflows defined by RUP are Business Modeling, Requirements, Analysis and Design, Implementation, Test, Deployment, Configuration and Change Management, Project Management, and Environment.

WHEN IS IT APPROPRIATE TO USE RUP?

The basic goal of RUP is to ensure productivity of high-quality software that meets the needs of its end users within a predictable schedule and budget. Any project team that aims at producing a software application that is not only meets the quality criteria but also meets the schedule, budget and maintenance criteria.

ADVANTAGES OF RUP?

RUP, if implemented as per the guidelines by an organization, can result in producing an application that meets the standards of QA. It contains several tools under its belt that are easy to learn and apply.

DISADVANTAGES OF RUP?

Although RUP has all the benefits, it has its share of drawbacks. In order to implement RUP in an organization

- *a major re-engineering process of the existing development system has to be performed*
- *Tools needed to implement RUP are extremely expensive and may not always be cost-effective for mid-size to small projects.*
- *Training the team members on RUP tools is expensive and time consuming.*

WHAT IS TESTING?

*Testing is a process of verifying the operation of a system or application under **controlled conditions** and evaluating the results.*
E.g., 'if the user is in interface A of the application while using hardware B, and does C, then D should happen'.
The controlled conditions should include both normal and abnormal conditions.
Testing should intentionally attempt to make things go wrong to determine if things happen when they shouldn't or things don't happen when they should. It is oriented to 'detection'.

DESCRIBE THE ENTIRE TESTING PROCESS?

Ideally Software Testing Process consists of three phases.

1. ***Pre-Testing Phase***
2. ***Acceptance Testing Phase***
3. ***Testing Phase***

Pre-testing Phase:
Review the Requirement Document
Set up the Testing Environment, MR Tool, Testing Tools, Database, Web Browser, Web Server etc.
Writing the Test Plan
Collecting the Test data
Writing the Test Cases

Acceptance Testing Phase:
Check the product test entrance criteria
Conducting the basic feature tests

Testing Phase:
Run the Test from Test plan
Use MR Tool to report and track Modifications, enhancements, and Defects
Resolve Defects
Perform regression Tests
Gather Test Metrics

WHAT IS A TEST PLAN?

*A software project test plan is a document that describes the **objectives, scope, approach, and focus** of a software testing effort. The process of preparing a test plan is a useful way to think through the **efforts needed to validate** the **acceptability of a software product**.*
Test plan is used by the testing team and also by the people outside the testing group.
Test Plan also contains the hardware, software and testing tools that could be used in the testing process.

It contains the test procedure that defined as to how the particular case should be tested, and the data input (scenario specific).
It primarily contains: ***Title, Software Version, DB Requirement, Test Tools, Requirement Number, Test Case, Test Pre-Condition, Test Procedures, Expected Result, Actual Result, Defect ID, Remarks, Pass/Fail.***

WHAT IS A TEST CASE?
A test case is a document that describes an ***input****,* ***action****,* ***or event*** *and an* ***expected response****, to determine if a* ***feature*** *of an application is working correctly. A test case should contain particulars such as* ***test case identifier, test case name, objective, test conditions/setup, input data requirements, steps, and expected results***

WHAT IS AUTOMATED TESTING?
Automated Testing is the kind of Software testing that is assisted with software tools that require no operator input, analysis, or evaluation. This category of testing is performed to reduce the repetitive actions or events in the testing process. Automation helps in simulating a realistic environment to execute the application enabling the testing process to be more efficient, effective, productive and synchronized (where required).

WHAT IS MANUAL TESTING?
Manual Testing is the part of software testing that requires human input, analysis, or evaluation. Every test case is manually run following the series of steps described in the test case description.
There is no automation tool to reduce the repetitive actions and executions. This requires lot of resources, effort and time. The testers performing the manual testing have to be innovative and creative in the process.

WHAT IS BLACK BOX TESTING?
Black Box testing is testing that is performed from a business/user perspective. It is not based on any knowledge of internal design or code. Tests are based on requirements and functionality.

WHAT IS WHITE BOX TESTING?
White Box Testing is based on knowledge of the internal logic of an application's code. Tests are based on coverage of code statements, branches, paths, conditions. Tester is required to have enough knowledge of the languages and other software used in developing the software module under test.

WHAT IS UNIT TESTING?
It is the most 'micro' scale of testing; to test particular functions or code modules. This is typically done by the programmer and not by testers, as it requires detailed knowledge of the internal program design and code. Not always easily done unless the application has a well-designed architecture with tight code; may require developing test driver modules or test harnesses.

WHAT IS INCREMENTAL INTEGRATION TESTING?
Incremental Integration Testing is continuous testing of an application as new functionality is added. This requires various aspects of an application's functionality to be independent enough to work separately before all parts of the program are completed, or that test drivers be developed as needed. This is done by programmers or by testers.

WHAT IS INTEGRATION TESTING?
Test of combined parts of an application to determine if they function together correctly. The 'parts' can be code modules, individual applications, client and server applications on a network, etc. This type of testing is especially relevant to client/server and distributed systems.

WHAT IS POSITIVE TESTING
Positive Testing is testing the application against test data that would result in producing the expected results.

WHAT IS NEGATIVE TESTING
Negative Testing is testing the application against all kinds of test input data that could possibly be fed by a user of the system. It is to done to check if the system is responding properly to wrong data.

WHAT IS SOAK TESTING?
Reveals the longevity characteristics of the system when exposed to extended durations of high demand.

WHAT IS FUNCTIONAL TESTING?
Funtional Testing belongs to the black-box testing category. The goal of Black box testing is test the functional requirements of an application. Its is usually the job of testers.

WHAT IS SYSTEM TESTING?
System Testing also belongs to the category of Black-box testing and is based on overall requirements specifications; covers all combined parts of a system.

WHAT IS END-TO-END TESTING?
End-to-End Testing is similar to system testing. This belongs to the 'macro' end of the test scale. Involves testing of a complete application environment in a situation that mimics real-world use, such as interacting with a database, using network communications, or interacting with other hardware, applications, or systems if appropriate.

WHAT IS SANITY/SMOKE TESTING?
Sanity Testing is typically an initial testing effort to determine if a new software version is performing well enough to accept it for a major testing effort. For example, if the new software is crashing systems every 5 minutes, bogging down systems to a crawl, or destroying databases, the software may not be in a 'sane' enough condition to warrant further testing in its current state.

WHAT IS REGRESSION TESTING?
Regression Testing can be defined as re-testing after fixes or modifications of the software or its environment. It can be difficult to determine how much re-testing is needed, especially near the end of the development cycle. Automated testing tools can be especially useful for this type of testing.

WHAT IS USABILITY TESTING?
Usability Testing is testing for 'user-friendliness'. This will depend on the targeted end-user or customer. User interviews, surveys, video recording of user sessions, and other techniques can be used. Programmers and testers are usually not appropriate as usability testers.

WHAT IS PERFORMANCE TESTING?
*Performance Testing is identifying the **time frame** within which the **system functions** are **performed** and checking if the values are within the **acceptable limits**. Performance Testing is done on an application only after the functional requirements are properly tested.*
Performance Testing is done in a stand alone environment as well as in a multi-user environment.
Performance Testing could be very tedious if performed in manual, as it could require lot of manual resources, time and synchronization. Hence, Automation is preferred.

WHAT IS VOLUME TESTING?
*Volume Testing is performed to check the **response** of the system upon **flooding** with huge amount or **large volumes of data**. This is true even for fetching large amounts of data.*

WHAT IS STRESS TESTING?
*Stress Testing can be defined as a test to determine the **breaking point** or an **unacceptable performance point** of a system to **reveal** the **maximum service level** the system can achieve.*

WHAT IS LOAD TESTING?
*Load Testing can be defined as a test to determine the **response times** of a system with **various workloads** within the **anticipated normal production range**.*
E.g.: Testing an application under heavy loads, such as testing of a web site under a range of loads to determine at what point the system's response time degrades or fails.

WHAT IS SCALABILITY TESTING?
*Testing performed to determine the behavior of a system with **expanded workloads** simulating **future production states** such as **added data** and an **increased amount of users***

WHAT IS SECURITY TESTING
Security testing is testing if the system is secure from authorized and unauthorized users. It is a check for confidentiality, integrity, availability, and security from hackers. It may require sophisticated testing techniques.

WHAT IS RECOVERY TESTING?
Testing to check if the system responds to errors and abnormal conditions such as system crash, hardware failures, communication, power failure or any other catastrophic problems. This is to check if the system recovers gracefully after crash without losing useful/critical data and without producing redundant/duplicate/bad data.

WHAT IS MUTATION TESTING?
Mutation testing is a method for determining if a set of test data or test cases is useful by deliberately introducing various code changes ('bugs') and retesting with the original test data/cases to determine if the 'bugs' are detected. Proper implementation requires large computational resources.

WHAT IS INSTALL/UNINSTALL TESTING?
Install/uninstall testing is performed to test full, partial, or upgrade install/uninstall processes.

WHAT IS COMPATIBILITY TESTING?
Compatibility testing is done to check how well software performs in a particular hardware/software/operating system/network/etc. environment.

WHAT IS EXPLORATORY TESTING?
Exploratory testing is often taken to mean a creative, informal software test that is not based on formal test plans or test cases; testers may be learning the software as they test it.

WHAT IS AD-HOC TESTING?
Ad-hoc testing - similar to exploratory testing, but often taken to mean that the testers have significant understanding of the software before testing it.

WHAT IS ACCEPTANCE TESTING?
Acceptance Testing is the final testing based on specifications of the end-user or customer, or based on use by end-users/customers over some limited period of time.

WHAT IS USER-ACCEPTANCE TESTING?
User Acceptance Testing is done to determine if the software is satisfactory to an end-user or customer.

WHAT IS COMPARISON TESTING?
Comparison Testing is done to compare software weaknesses and strengths to competing products.

WHAT IS ALPHA TESTING?
Alpha Testing is testing of an application when development is nearing completion. Minor design changes may still be made as a result of such testing. Typically done by end-users or others, not by programmers or testers.

WHAT IS BETA TESTING?
Beta Testing effort is done when development and testing are essentially completed and final bugs and problems need to be found before final release. Typically done by end-users or others, not by programmers or testers.

WHAT IS AN MR TOOL?
MR Tool is a Modification Request tool also called as a Defect Tracking tool. It is used by the testing team to communicate with others and keep record of the history of the defects. this can also be used by the management team to monitor the progress of defects or modification requests, analyze the quality of the product which could help make decisions about the release or schedule for the system.

HOW DO YOU TRACK DEFECTS USING MR TOOLS?
Each MR contains Severity, Due Date, Assigned to, Status, Release Version, Platform, Module, Person responsible for the Resolution of the Request, Description of the Request. This information can be used to track the Requests.