**WEEK 1: COURSE WORK( FUMDAMENTALS OF SOFTWARE TESTING)**

1. **What is software testing?**

* It is an investigation conducted to provide stakeholders with information about quality of the product under test. Software testing is a process of executing a program or application with the intent of finding the software bugs.

It can also be stated as the **process of validating and verifying**that a software program or application or product:

* Meets the business and technical requirements that guided it’s design and development
* Works as expected
* Can be implemented with the same characteristic.

1. **Describe to me Agile Software Development Life Cycle and when is a QA involved?**

* Agile SDLC model is a combination of iterative and incremental process models with focus on process adaptability and customer satisfaction by rapid delivery of working software product. Agile Methods break the product into small incremental builds. These builds are provided in iterations. Each iteration typically lasts from about one to three weeks. Every iteration involves cross functional teams working simultaneously on various areas like −
* Planning
* Requirements Analysis
* Design
* Coding
* Unit Testing and
* Acceptance Testing.

At the end of the iteration, a working product is displayed to the customer and important stakeholders.

* Agile model believes that every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release.
* Iterative approach is taken and working software build is delivered after each iteration. Each build is incremental in terms of features; the final build holds all the features required by the customer.

**QA Involvement**

The concept of ‘isolated’ developers and testers is been left apart. As agile goal balances the desire of having a functional prototype with the requirement of quality, a small team including QA is the right solution to accomplish the task of having a new functionality within a fixed period of time. The concept of separate teams with individual goals is obsolete and has evolved into teams composed of cross-functional members with various levels of knowledge. With daily meetings, informal discussions and if necessary, the stakeholder participation, collaboration is encouraged. In this open and collaborative environment the final objective and responsibilities are shared.

1. **What is the role of QA in a company that produces software?**

* Role of QA in a company that produce software is:
* To read all the documents and understand what needs to be tested.
* Based on the information procured in the above step decide how it is to be tested.
* Inform the test lead about what all resources will be required for software testing.
* Develop test cases and prioritize testing activities.
* Execute all the test case and report defects, define severity and priority for each defect.
* Carry out testing every time when changes are made to the code to fix defects.

**4.When will you advise to use Waterfall Vs Agile?**

* We should use waterfall instead of agile model when:
* Projects where you’re working with other organisations or remote workers.
* Projects with a fixed scope, time and budget.
* Smaller, well-defined and simpler projects.
* Projects with an absent client.

**5. List 3 challenges testers face when testing a software**

Three challenges testers face are:

* Time:  Time has always been a limiting factor for Software testers and is challenging especially when it comes to execution of Regression tests.  During testing phase, testers are asked to perform multiple rounds of Regression tests and the time taken for these regression test cases could range from 100s to 1000s depending on the size of the application.
* Test Estimation: There are many established Test Estimation methods.  Deriving accurate test estimates is a vital factor for successful Software Testing Phase.  Good Test Estimates will include an estimate time for all the activities performed during Software Test Life Cycle irrespective of the size of the task.
* Setting up Test environment: In most of the bigger organizations, Test environment setup is done by Operations / Technical support team.  However in smaller or midsized companies, Test environment setup could seem extremely difficult.  Environment setup is one the tasks that necessitates knowledge of various software and testers find it most challenging.
* Team at different locations:  If Business Analysts and development teams are located in locations other than the time zone of testing team, the testers might have to extend their working hours to get clarifications or attend meetings.  Difference in time zone could result in longer wait time and general delays.

**6.Explain three Principles of Software Testing?**

**Principle 1: Testing shows presence of defects :**Testing can show that defects are present, but cannot prove that there are no defects. Testing reduces the probability of undiscovered defects remaining in the software but, even if no defects are found, it is not a proof of correctness.

**Principle 2: Exhaustive testing is impossible :** Testing everything (all combinations of inputs and preconditions) is not feasible except for trivial cases. Instead of exhaustive testing, we use risks and priorities to focus testing efforts.

**Principle 3: Early testing :** Testing activities should start as early as possible in the software or system development life cycle and should be

focused on defined objectives.