Unit 5 : Testing Tools and measurements.
(weightage – 12 marks)

Q1 Give any four difference between manual and automated testing. (4 marks)

⇒

Parameters	Manual Testing	Automation Testing
Definition	In manual testing the test cases are executed by human tester.	In automation testing, the test cases are executed by software tools
Processing Time	manual testing is time-consuming	It is comparatively faster.
Resources requirement	manual testing takes up human resources.	Automation testing takes up automation tools & trained employees.
Initial Investment	It is lower	It is higher.
Errors Accuracy	won't be accurate it includes human errors.	It can be accurate as it is performed by tools.
Suitable	almost any software product	only for stable System & regression
Performance & Batch Testing	Not possible	possible.

Q2. Differentiate between static and dynamic testing tools. (4 marks).

⇒

Parameters	Static Techniques	Dynamic Techniques
Execution	No execution of code, programs, or documentation.	Execution of test case is done on actual system.
Purpose	To identify defects early, without executing system.	To test the functional behaviour of system during runtime.
Nature of Testing	Review based, checks documentation, code standards etc.	validation based, ensures software behave as expected
Testing methods	Review, walkthrough, inspection, audits.	Black & white Box testing methods like system & structural testing.
Evaluation	checks conformance for requirements	Evaluates the system based on actual output compared to expected results
Tools Used	Checklists, Standards, peer reviews	Test automation tools, debugging tools.
Focus	Prevents defects by reviewing documents early in cycle.	Detects by running and validating the system dynamically

Q3 Enlist any four software testing tools. (2 marks)

⇒ 1) JIRA
2) QTest
3) TestRail
4) Cucumber
5) Selenium
6) Load Runner
7) Xray
8) Junit
9) Nunit
10) TestLink
11) Sahi
12) Eggplant
13) Zephyr
14) BrowserStack

Q4 Why is there a need for automated testing tools? State any two reasons.

⇒ (1) Automated testing tools repeat pre-recorded actions and check if results match the expected once.
(2) Once created, automated tests can be easily reused and can do tasks that manual testing can't handle.
(3) Automation saves time and money by reducing the need for manual, repetitive tests.
(4) Automation improves accuracy by avoiding human errors in repetitive tasking.
(5) Automated tests can run on different computers and configuration to check compability.
(6) Automated tools can also check inside the software, like memory and data, to ensure everything works as expected.

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Advantages and Disadvantages of using Tools. (4marks/2marks)

⇒ Advantages

① Saves Time: Automated tests run faster than manual tests, provides quick results.

② Cost-Effective: Although there may be high setup cost, automated testing saves money in long run by reducing need for manual labour.

③ Can Be Reused: Once created, automated tests can be run many times without extra effort.

④ More Accurate: Automated tests are consistent and avoid mistakes that can happen in manual testing.

⑤ Detailed Reports: They provide clear logs and reports, making it easy to find & fix problems.

⑥ Parallel Testing: Automated tests can run on several computers at once, ensuring broader coverage.

⑦ Reusable: The automated tests can be reused on different versions of software, if even interface changes.

⇒

02

Disadvantages

① Needs Regular maintenance: Tests need to regularly updated when software changes.

② Dependency increased: People depend on the tool alot.

③ No Human touch: They may not catch usability problems that mgh person notice.

④ Complex Setup: Setting up automated testing tools can be complicated and time-consuming.

⑤ Limited Flexibility: Automated testers can only check what a programmed for and might miss unexpected issues.

⑥ High Initial Cost: Setting up automated testing can be expensive and requires investment in tools and training.

Q6 State any eight (four) limitation of manual testing. (4 marks)

⇒ ① Manual testing is slow and expensive.

② It requires a lot of time and effort to complete tests.

③ Manual testing struggles as software complexity increases, making it costlier and more time consuming.

④ Results vary between testers, making test inconsistent.

(5) Many tester lacks proper training, leading to mistakes.

(6) Finding small differences in gui sizes and colors is difficult.

(7) manual testing is not effective for large or time-sensetive projects.

(8) You cant run multiple tests at once; each requires human interactions.

(9) Comparing large data sets manually is harder and impratical.

(10) Handling change requests takes longer with manual testing.

Q7 Enlist factors considered for selecting a testing tool for test automation 4marks

or

Desribe the criterias to select testing tools. 4marks.

(1) Check Readiness: make sure your company is ready for new tool.

(2) Find Areas in Improvement: Look for places where the tool can help testing get better.

(3) Compare Tools: See which tools matches your needs and goals.

(4) Test the tool: Try the tool on small project to check if it works well.

(5) Check the vendor: See if vendor gives good support, traing and its affordable.
(6) Plan How to use it: Make a plan for using the tool and helping your team learn in it.

Q8 Define metrics and measurements. Describe three types of metrics. Need of software measurement. — 8 marks.

Software measurement

This is the way we measure the size, amount, or quality of something in software.

It helps us understand specific features of software product or process, like how big it is or how well it works.

Types of software measurement → Direct measurement
→ Indirect measurement

Need of Software Measurement

1) find and fix problems.
2) Check quality of product & process.
3) improve product or process.
4) Ensures industrial standards are followed
5) make better decisions based on data.
6) provide clear way to evaluate the product.

Software metrics

A software metrics is a measurement of level of at which any impute belongs to a system product or process.
Software metrics are numbers that help asses the quality or feature of software product.

There are 4 main functions related to software metrics

- Planning
- Organizing
- Controlling
- Improving.

Types of software metrics
- Product metrics
- Project metrics
- Process metrics.

1. **Product metrics**: used to asses the state of software product.
They help identify risks and potential problem areas and evaluate team's ability to manage quality.
Examples include loc, cyclomatic complexity, code coverage etc...

2. **Process metrics**: focus on improving the long term process within the team or organization.
These metrics are used to optimise software development & maintenance activities
Examples: effort variance, schedule variance, lead time etc...

③ Project metrics : describe characteristics and progress of project.
They measure things like effort, estimate ~~necessary~~ schedule deviation cost variance and productivity.
Common project metrics include no. of software developers, staffing pattern throughout the project, cost schedule & productivity.

End

Project Scope