CS/IT 424(E)

Hall Ticket Number:

IV/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION

April, 2017 **Common for CSE & IT**

Eighth Semester **Software Testing Methodologies**

Time: Three Hours **Maximum :** 60 Marks

Answer Question No.1 compulsorily. (1X12 = 12 Marks)

Answer ONE question from each unit. (4X12=48 Marks)

1 Answer all questions (1X12=12 Marks)

a) Write two Goals of Testing.
Quality Control and Quality Assurance.

(OR)

Provide the defect free product to the customers.
To detect and correct the defects produced in the product.

b) Difference between quality assurance and quality control.

Quality Assurance	Quality Control
Concentrates on the process of producing the products.	Concentrates on specific products.
This is a staff function.	This is a line function.
Ex: reviews and audits.	Ex: testing.

c) What is Static Testing?
Static testing is a type of testing which requires only the source of the product, not the binaries or executables.

(OR)

It is a type of testing one will test the application by look and feel.

d) What is beta testing?
It is a type of user acceptance testing conducted by the third party test engineers, just before actual implementation of the application.

e) List test cases for acceptance testing.
1.End-to-end functionality verification
2.Domain tests
3.A few non-functional tests
4.New functionality

f) Write various functional Performance Tools.
1.WinRunner from mercury
2.QA Partner from Compuware
3.QTP
4.Selenium

g) What is meant by Pair Testing?
It is a testing done by two testing people working simultaneously on the same machine to find defects in the product.

h) Write various categories of organizations.
1.Organization type
  a. Product Organizations
  b. Service Organizations
2.Geographic distribution type
  a. Single-site team
  b. Multi-site team

i) Responsibility of Usability test engineer.
1.Checks the Look and feel of the application and its speed.
2.Checks for user friendliness of the application.
3. Pleasantness of the application.

j) Write requirements for Test Tools.
1.Supported Environment
2.Hardware and software resources
3.Test engineers with minimum knowledge about test tools

k) Write necessity of Software Automation.
1.Automation makes the software to test the software and enables the human effort to be spent on creative testing.
2.Reduces manpower.

l) Uses of Metrics and Measurements.
Metrics derive information from raw data with a view to help in decision making.
1.When to make the release
2.What to release
3.Whether the product is being released with known quality
4.Effort and Elapsed time

UNIT I

2 a) How defects from early phases add to the cost? Explain with relevant figure. 6M

Defects in a product can come from any phase. There could have been errors while gathering requirements. If a wrong or incomplete requirements forms the basis for the design and development of a product, then that functionality can never be realized correct in the eventual product. Similarly, when a product design which forms the basis for the product development is faulty, then the code that realizes the faulty design will also not meet the requirements. Thus, an essential condition should be that every phase of software development should catch and correct defects at that phase, without letting the defects seep to the next stage.

1.Performing a wrong design based on the wrong requirements.
2.Transforming the wrong design into wrong code during the coding phase.
3.Testing to make sure the product compiles with the (wrong) requirement.
4.Releasing the product with the wrong functionality.

Requirements Phase	Correct Requirements	Defects in Requirements			
Design Phase	Correct Design	Defects in Requirements	Defects in Design		
Coding Phase	Correct Code	Defects in Requirements	Defects in Design	Defects in Code	
Testing Phase	Defects Found	Defects in Requirements	Defects in Design	Defects in Code	Defects not Found

Figure 2 Marks, any 5 relevant points 4 marks.

b) Describe the phases of software project. 6M

1.Requirements gathering and analysis 2.Planning
3.Design 4.Coding
5.Testing 6.Deployment and maintenance

Listing of Phases 2 Marks, writing 3 relevant points of any 3 Phases 4 marks will be awarded

(OR)

3 a) Describe Code Coverage Testing in detail. 6M

1.Statement coverage
2.Path coverage
3.Condition coverage
4.Function coverage

Listing of coverages 2 Marks, writing 3 relevant points of any 3 coverages 4 marks will be awarded

b) Why Black Box Testing? Explain. 6M

1.Black box testing is done based on requirements:

It helps in identifying any incomplete, inconsistent requirements as well as any issues involved when The system is tested as a complete entity.

2.Black box testing addresses the stated requirements as well as implied requirements:

Not all the requirements are stated explicitly, but are deemed implicit. Inclusion of dates, page header And footer provides better readability and usability to the customer.

3.Black box testing compasses the end user perspectives:

Since we want to test the behaviour of a product from an external perspective, end-user perspectives are an integral part of black box testing.

4.Black box testing handles valid and invalid inputs:

It is natural for users to make errors while using a product. Hence, it is not sufficient for black box testing to simply handle valid inputs. Testing from the end-user perspective includes testing for these error or invalid conditions.

Explaining any 3 features 6 marks will be awarded

UNIT II

4 a) Explain Scenario Testing in detail. 6M

It is defined as a set of realistic user activities that are used for evaluating the product.

There are two methods to evolve scenarios

1.System Scenarios

2.Use-case Scenarios

System Scenarios:

1.Story line 2.Life cycle/state transition 3.Deployment 4.Business verticals 5.Battle ground

Use-case Scenarios:

A use case scenario is a step wise procedure on how a user intends to use a system, with different user roles and associated parameters.

Writing def, listing of types-→2M,explaining each Scenario type 2 Marks will be awarded.

b) Explain Non-Functional Testing in detail. 6M

Non-Function testing is performed to verify the quality factors.

Types:

1.Setting up the configuration 2.Coming up with entry/exit criteria 3.Balancing key resources
4.Scalability testing 5.Reliability testing 6.Stress testing 7.Interoperability testing

Writing def, listing of types-→2M,explaining any 4 types 4 Marks will be awarded.

(OR)

5 a) Explain a methodology for performance testing in detail. 6M

The testing performed is to evaluate the response time, throughput and utilization of the system, to execute its required functions in comparison with different versions of the same product or a different competitive product is called performance testing.

Types:

1.Collecting requirements 2.Executing performance test cases
3.Writing test cases 4.Analyzing performance test results
5.Automating performance test cases 6.Performnace tuning
7.performance benchmarking 8.Recommending right configuration for the customers

Writing def, listing of types-→2M,explaining any 3 types 4 Marks will be awarded.

b) How to do regression testing? Explain in detail. 6M

Regression testing can be performed irrespective of which test phase the product is in.

The failure of regression can only be found very late in the cycle or found by the customers. Having a well-defined methodology for regression can prevent such costly misses.

Types:

1.Performing an initial "smoke" or "sanity" test 2.Understanding criteria for selecting the test cases
3.Classifying the test cases into different priorities 4.A methodology for selecting test cases
5.Resetting the test cases for test execution 6.Concluding the results of a regression cycle

Writing def, listing of types-→2M,explaining any 3 types 4 Marks will be awarded.

UNIT III

6 a) Explain Exploratory Testing in detail. 6M

Exploratory testing is to find defects in adhoc testing is to keep exploring the product, covering more depth and breadth.

Techniques:

1.Guesses 2.Architecture diagrams, use cases 3.Past defects 4.Error handling 5.Discussions 6.Questions and checklists

Writing def, listing of techniques-→2M,explaining any 3 techniques 4 Marks will be awarded.

b) Describe Accessibility Testing in detail. 6M

Verifying the product usability for physically challenged users is called accessibility testing.

Types:

1.Basic accessibility 2.Keyboard accessibility 3.Screen accessibility 4.Other accessibility features 5.Product accessibility

Writing def, listing of types-→2M, explaining any 3 types 4 Marks will be awarded.

(OR)

7 a) Describe comparison between testing and development functions. 6M

Testing is often a crunch time function: Even though there are different phases of testing and different types of testing that get distributed throughout software life cycle, the major thrust on testing usually comes close to product release time.

Generally more "elasticity" is allowed in projects in earlier phases: It is considered almost normal to expect that the development functions will take longer than planned.

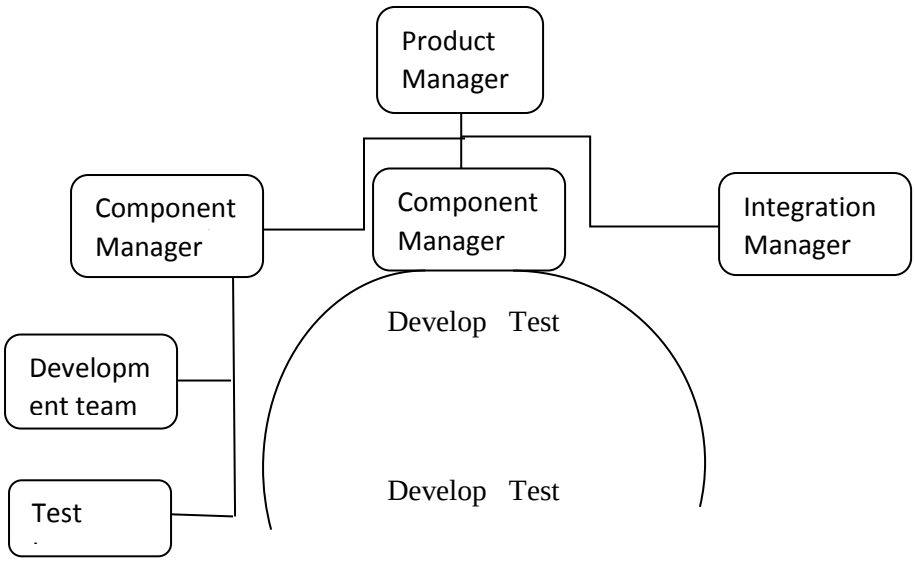
Testing functions are arguably the most difficult ones to staff: For all the reasons we are discussing in this, there is a much smaller number of people who take to testing as a career compared to other functions. This makes it difficult to attract and retain top talent for testing functions.

Testing functions usually carry more external dependencies than development functions: There are two factors that contribute to this. The first factor is that testing comes at the end of project life cycle. Secondly, testing activities usually have a number of "show stopper" situations where in the testing activities would come to a standstill until certain defects in the product get fixed.

Any 4 relevant points 6 marks will be awarded

b) Explain structures for Multi-Product companies in detail. 6M

When a company becomes successful as a single-product company, it may decide to diversify into other products. In such a case, each of the products is considered as a separate business unit, responsible for all activities of a product.



Types:

1.Single test team for all products 2.Test teams organized by products

3.Separate testing teams for different phases of testing 4.Testing teams as part of "CTO's" office

5. Hybrid models

Drawing Structure 2 Marks, explaining any 3 types 4 marks will be awarded

UNIT IV

8 a) Describe Test Management. 6M

Choice of standards: Standards comprise an important part of planning in any organization. Standards are of two types – external and internal standards. External standards are standards that a product should comply with, are externally visible, and are usually stipulated by external consortia. Internal standards are standards formulated by a testing organization to bring in consistency and predictability.

Test Infrastructure Management: Testing requires a robust infrastructure to be planned upfront. This infrastructure is made up of three essential elements: 1.A test case database
2.A defect repository 3.Configuration management repository tool

Test people management: People management is an integral part of any project management. Often, it is a difficult chasm for engineers-turned-managers to cross.

Integrating with product release: Ultimately, the success of a product depends on the effectiveness of integration of the development and testing activities. These job functions have to work in tight unison between themselves and with other groups such as product support, product management, and so on.

Stating and explaining any of the above 3 relevant factors 6 marks will be awarded

b) Write short notes on Test Execution and Reporting. 6M

Test Execution: The prepared test cases have to be executed at the appropriate times during a project. For example, test cases corresponding to smoke tests may be run on a daily basis. System test cases will be run during system testing.

Any relevant points are stated 2 marks will be awarded

Test Reporting: Test reporting is a means of achieving communication between the test team and teams. There are two types of reports or communication that are required: Test incident reports and test summary reports.

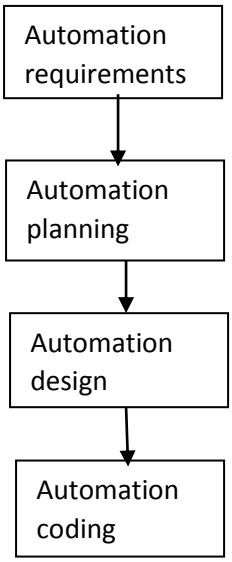
Types:

1.Test incident report 2. Test cycle report 3.Test summary report

Writing def, Listing types 1 mark, Explaining above 3 types with 3-4 relevant points 3 marks will be awarded

(OR)

9 a) Describe Process Model for Automation. 6M



Automation Process Model

Process model diagram 2 marks, explaining Process model 4 marks will be awarded

b) Explain Metrics on Productivity. 6M

Productivity metrics combine several measurements and parameters with effort spent on the product. They help in finding out the capability of the team as well as for other purposes, such features as

Features:

1.Estimating for the new release
2.Estimating the number of defects that can be found
3.Estimating the release date and quality
4.Estimating the cost involved in the use case

Factors:

1.Defects per 100 hours of testing 2.Test cases executed for 100 hours of testing
3.Test cases developed per 100 hours of testing 4.Defects per 100 test cases
5.Defects for 100 failed test cases 6.Test phase effectiveness
7.Closed defect distribution

Writing def, listing of features 2 marks, explaining any of 3 factors 4 marks will be awarded

HOD, IT

Signature of paper evaluators:

S. No	Faculty Name	College Name	Contact Number	Signature
1				
2				
3				
4				