

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SIXTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2023

(2020 SCHEME)

Course Code : 20CST382

Course Name: Introduction to Software Testing

Max. Marks : 100

Duration: 3 Hours

PART A

(Answer all questions. Each question carries 3 marks)

1. Differentiate between Validation and Verification.
2. Explain the differences between Alpha Testing and Beta Testing.
3. A software engineering group is developing a mission-critical software system that will launch laser-guided missiles to its destinations. This is a new kind of product that was never built by the company. As a quality assurance manager, which code review methodology would you recommend? Justify your answer.
4. Highlight the functions of test driver and test stubs in dynamic unit testing.
5. Define node coverage, edge coverage and simple round-trip coverage in a control flow graph.
6. Define SESE Graphs. Explain its unique feature.
7. Describe pair-wise coverage and T-wise coverage.
8. Compare and contrast between Equivalence class partitioning and boundary value analysis.
9. List out the advantages of Grey box testing.
10. Define symbolic execution and state its importance.

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) Explain various Beizer's Testing Levels based on test process maturity. (10)
b) Describe positive and negative test cases for Facebook Application. (4)

OR

12. a) Define software testing and explain various methods used for testing. (8)

- b) Describe various types of performance testing. (6)

MODULE II

13. a) Explain different types of mutation testing with the help of suitable examples. (9)
- b) Illustrate dynamic unit test environment and explain the activities performed (5)

OR

14. a) Calculate cyclomatic complexity for the given code (8)
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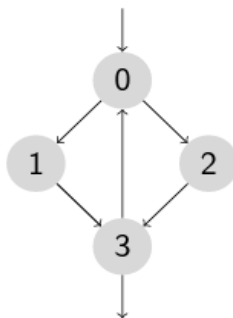
a=100;
If (a>b) then
 a=b;
else
{
 If (a>c) then
 b=c;
 else
 c=a;
}
Print a
Print b
Print c

```

- b) A test engineer generates 60 mutants of a program P and 100 test cases to test the program P. After the first iteration of mutation testing, the tester finds 45 dead mutants and 6 equivalent mutants. Calculate the mutation score for this test suite. Is the test suite adequate for program P? Should the test engineer develop additional test cases? (6)

### MODULE III

15. a) Explain touring, side trips and detours with the help of suitable examples. (6)
- b) Explain simple path coverage and prime path coverage with the help of the CFG below: (8)



**OR**

16. a) Explain Graph coverage for design elements with the help of suitable example (8)  
b) Draw CFG fragment for:  
i) if else statement ii) While loop iii) switch case (6)

**MODULE IV**

17. a) Describe four important steps in functional testing. (8)  
b) Explain various input domain modelling approaches. (6)

**OR**

18. a) Write short notes on various types of functional testing techniques. (8)  
b) Illustrate working of decision tables with the help of suitable example. (6)

**MODULE V**

19. a) Write short notes on:  
i) Matrix Testing ii) Pattern Testing (8)  
iii) Orthogonal array testing iv) Regression Testing  
b) Explain Parametrized Unit Testing (6)

**OR**

20. a) Explain Grey Box Testing Methodology along with its objectives. Highlight some of the disadvantages associated with this strategy (9)  
b) Explain the concept of Symbolic Execution Tree (5)

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