

Reg No.: \_\_\_\_\_

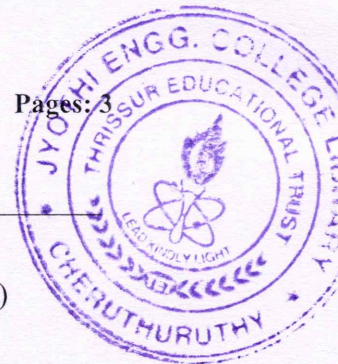
Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**B.Tech S6 (Minor) Degree Examination May 2025 (2022 Admission)**  
**Course Code: CST382**

**Course Name: INTRODUCTION TO SOFTWARE TESTING**

Max. Marks: 100

Duration: 3 Hours



**PART A**

*Answer all questions, each carries 3 marks.*

Marks

- |    |  |     |
|----|--|-----|
| 1  | Explain the differences between Validation and Verification.                               | (3) |
| 2  | Why is unit testing typically performed by the programmer who develops the code?           | (3) |
| 3  | What is meant by functional program testing?   | (3) |
| 4  | Define the terms Mutation and Mutants.   | (3) |
| 5  | Explain about simple path and prime path.  | (3) |
| 6  | Draw the control flow graph for 'switch' and 'for' statement.                              | (3) |
| 7  | Explain the difference between Equivalence Class Partitioning and Boundary Value Analysis. | (3) |
| 8  | Briefly explain three techniques of Grey box testing.                                      | (3) |
| 9  | List the three key aspects in functional testing.  | (3) |
| 10 | Explain the concept of symbolic execution with the help of a toy example.                  | (3) |

**PART B**

*Answer one full question from each module, each carries 14 marks.*

**Module I**

- |    |   |      |
|----|---|------|
| 11 | a) Explain the following types of testing<br>(i) Black Box testing (ii) White Box testing (iii) Grey Box testing (iv) Unit testing (v) Integration testing (vi) System testing (vii) Acceptance testing | (14) |
|----|---|------|

**OR**

- |    |   |      |
|----|---|------|
| 12 | a) Describe the characteristics of the five test process maturity levels  | (10) |
|    | b) Design four test cases to evaluate the functionality of an 'Image Viewer' mobile application developed for Android devices, which enables users to view images stored in the phone's internal memory | (4)  |

**Module II**

- |    |  |     |
|----|--|-----|
| 13 | a) Explain about Control flow testing. | (7) |
|----|--|-----|



- b) Explain about Data Flow testing (7)

**OR**

- 14 a) Explain dynamic test unit environment with neat diagram (7)  
b) JUnit as a framework for unit testing. Explain (7)

**Module III**

- 15 a) Draw the CFG for the following two code segments. (10)

<p>a) If (x&lt;y)</p> <pre>{ y=0;   x=x+1; }</pre>	<p>b) x=0;</p> <pre>while(x&lt;y) { y=f(x,y);   x=x+1; }</pre>
--	--

- b) Explain the following terms with example (4)  
i) coupling du pair      ii) method and call coverage

**OR**

- 16 a) Draw CFG fragment for (6)  
(i) for loop (ii) Switch statement  
b) Explain touring, side trips and detours with a neat example. (8)

**Module IV**

- 17 a) Explain the two approaches in input domain modelling. (7)  
b) List the guidelines for performing Boundary value Analysis. (7)

**OR**

- 18 a) Domain testing is an intelligent method of testing. Justify your answer by explaining different criteria for combining multiple partitions in domain testing. (14)

**Module V**

- 19 a) Grey box testing combines the advantages of both black box and white box testing. Justify your answer. (10)  
b) Explain parameterized unit testing. (4)

**OR**

- 20 a) (a) Consider the code fragment given below: - (7)  
1. POWER: PROCEDURE(X, Y);  
2. Z <----- 1;  
3. J <----- 1;

4. LAB: IF  $Y \geq J$  THEN

5. DO;  $Z \leftarrow Z * X$

6.  $J \leftarrow J + 1$ ;

7. GO TO LAB; END;

8. RETURN (Z) ;

9. END;

a) Explain the symbolic explanation of POWER(a1,a2)

b) Explain the execution tree for POWER(a1,a2) in the above code fragment.

(7)

\*\*\*\*