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**Presidency University**

**Bengaluru**

 **School Of Computer Science and Engineering & Information Science**

**SUMMER End-Term Examinations, Aug 2024**

**Date**: 05/08/2024

**Time**: 9:30am to 12:30 pm

**Max Marks**: 100

**Weightage**: 50%

**Summer Term**: 2023 - 24

**Course Code**: CSA2010

**Course Name**: Software Testing

**Department:** SOIS / BCA

 **Instructions:**

1. *Read the all questions carefully and answer accordingly.*
2. *Do not write any matter on the question paper other than roll number.*

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| **Q.No** | **Questions** | **Marks** | **CO** | **RBT** |
| 1 | 1. What is the primary purpose of the Testing phase in the SDLC
 | 4 | CO1 | L1 |
| 1. What are the main activities involved in the Planning phase of the Software Development Life Cycle (SDLC)
 | 6 | CO1 | L1 |
| 1. Illustrate the Spiral Model in software development, and what are its key advantages and disadvantages?
 | 10 | CO1 | L2 |
| OR |
| 2 | 1. What is Quality Assurance (QA) and how does it differ from Quality Control (QC)?
 | 4 | CO1 | L1 |
| 1. Differentiate between Verification and Validation in software testing.
 | 6 | CO1 | L2 |
| 1. Discuss the concept of Rapid Application Development (RAD) and its phases.
 | 10 | CO1 | L2 |

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| 3 | 1. What is the purpose of a Decision Table in software testing?
 | 4 | CO2 | L1 |
| 1. What is Equivalence Partitioning in software testing?
 | 6 | CO2 | L2 |
| 1. Consider the following next date problem scenario: Next date is a function consisting of three variables like: month, date and year. It returns the date of next day as output. It reads current date as input date.

 The constraints areC1: 1 <= month <= 12 C2: 1 <= day <= 31C3: 1947 <=year <= 2030If any one condition out of c1, c2 or c3 fails, then this function produces an output "Invalid input date".A very common and popular problem occurs if the year is a leap year. We have taken into consideration that there are 31 days in a month. But what happens if a month has 30 days or even 29 or 28 days?For the above scenario, write boundary value test cases and decision table test cases.  | 10 | CO2 | L3 |

OR

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| 4 | 1. Describe the process of Boundary Value Analysis (BVA) with an example.
 | 4 | CO2 | L1 |
| 1. Explain Equivalence Partitioning with a detailed example.
 | 6 | CO2 | L2 |
| 1. Assume a program, that accepts three integers which are supposed to be the three sides of a triangle and determine if the three values represent an equilateral triangle, isosceles triangle, scalene triangle, or they do not form a triangle at all. Assume that the upper limit for the size of any side is 15. The sides of the triangle must satisfy the following conditions –

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| C1. | 1≤ a ≤ 15 | C4. |  a < b+c |
| C2. | 1≤ b ≤ 15 | C5. |  b < a+c |
| C3. | 1≤ c ≤ 15 | C6. | c < a +b |

For the above scenario, write boundary value analysis test cases and decision table test cases. | 10 | CO2 | L3 |

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| 5 | 1. What is 'Defect Removal Efficiency' and how is it calculated?
 | 4 | CO3 | L1 |
| 1. What is Automation Testing and how does it differ from Manual Testing?
 | 6 | CO3 | L2 |
| 1. Discuss the Defect Life Cycle in detail with a diagram.
 | 10 | CO3 | L1 |

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| 6 | 1. Explain Smoke Testing and Functional Testing.
 | 4 | CO3 | L1 |
| 1. Describe the 'Fixed' and 'Retest' states in the Defect Life Cycle.
 | 6 | CO3 | L2 |
| 1. Describe the different types of Software Testing Metrics and their significance.
 | 10 | CO3 | L2 |

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| 7 | 1. Define Cyclomatic Complexity with example
 | 4 | CO2 | L1 |
| 1. Explain the difference ways of static testing by humans.
 | 6 | CO2 | L2 |
| 1. Equivalence testing is done to enhance test coverage, save time and effort. Discuss the differences between Weak Normal, Strong Normal, Weak Robust, and Strong Robust Equivalence Class Testing.
 | 10 | CO2 | L3 |

OR

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| 8 | 1. What is static testing?
 | 4 | CO2 | L1 |
| 1. Outline the process of creating test cases using the Decision Table technique.
 | 6 | CO2 | L2 |
| 1. A website created by group of developers is tested. Explain the significance of test case execution and reporting in the software testing process.
 | 10 | CO2 | L3 |

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| 9 | 1. Define Regression Testing and Black-box testing
 | 4 | CO3 | L1 |
| 1. Calculate the Test case preparation productivity if we take 60 hours in preparing 720 test cases and number of new defects arrived due to fixing of 68 defects are 12.
 | 6 | CO3 | L2 |
| 1. Consider the following binary search problem scenario: Give the input as an array of 7 numbers which should be multiples of 11 in order. In these numbers search for a key element and display appropriate messages on screen. Write the binary search function and perform the following operations -
2. Draw the control flow graph
3. Calculate the Cyclomatic Complexity
4. Select a basis set of paths.
5. Generate test cases for each of these paths
 | 10 | CO3 | L3 |

OR

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| 10 | 1. Define Keyword Testing and Integration testing.
 | 4 | CO3 | L1 |
| 1. Determine the Test case execution productivity if we take 70 hours in executing 920 test cases.
 | 6 | CO3 | L2 |
| 1. Consider the following grading problem scenario: Mr. George is a final year BCA student. As part of his assessments he has appeared for all the assessments and has obtained a certain CGPA. He would like to know his final grade based on the CGPA that he obtained. If CGPA is greater than or equal to 9 then grade is ‘Outstanding’. If CGPA is greater than or equal to 8 and less than 9, then grade is ‘A+’. . If CGPA is greater than or equal to 7 and less than 8, then grade is ‘A’. . If CGPA is greater than or equal to 6 and less than 7, then grade is ‘B’. . If CGPA is greater than or equal to 5 and less than 6, then grade is ‘C’. If CGPA is less than 5 then grade is fail. For the above scenario, Write the program and perform the following operations -
2. Draw the control flow graph
3. Calculate the cyclomatic complexity
4. Select a basis set of paths.
5. Generate test cases for each of these paths
 | 10 | CO3 | L3 |