

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: BCA
BRANCH: BCA**

**SEMESTER : V/ADD
SESSION : MO/2025**

SUBJECT: CN309 SOFTWARE TESTING

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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|--------|--|-------|----|
| Q.1(a) | Discuss the principles of software testing and explain how understanding the psychology of testing helps test engineers perform more effective testing. | [5] 1 | 2 |
| Q.1(b) | Explain the process and purpose of code inspections, desk checking, group walkthroughs, and peer reviews. How do these techniques contribute to early defect detection and improved software quality? | [5] 3 | 3 |
| Q.2(a) | <pre>def calculate_grade(marks):
 if marks >= 90:
 return "A"
 elif marks >= 75:
 return "B"
 elif marks >= 60:
 return "C"
 elif marks >= 40:
 return "D"
 else:
 return "F"</pre> | [5] 2 | 4 |
| Q.2(b) | <p>Using the above program, design test cases based on Boundary Value Analysis and Equivalence Class Partitioning. Identify all valid and invalid input classes and specify boundary values to ensure complete functional test coverage.</p> <pre>def check_triangle(a, b, c):
 if a + b > c and b + c > a and a + c > b:
 if a == b == c:
 return "Equilateral"
 elif a == b or b == c or a == c:
 return "Isosceles"
 else:
 return "Scalene"
 else:
 return "Not a Triangle"</pre> <p>Draw the Control Flow Graph for the given program and determine the independent paths. Calculate the Cyclomatic Complexity and explain how many test cases are needed for complete branch coverage.</p> | [5] 2 | 4 |
| Q.3(a) | Explain the various testing activities carried out during the software testing life cycle. Discuss the importance of debugging and regression testing in ensuring software reliability and stability. | [5] 3 | 3 |
| Q.3(b) | Describe the objectives and procedures of extreme testing and system testing. How do these testing approaches help evaluate the software's behavior under unusual or boundary conditions? | [5] 2 | 4 |

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Q.4(a)	Describe the major issues encountered in object-oriented testing. How do encapsulation, inheritance, and polymorphism affect the design of effective test cases?	[5]	3	3
Q.4(b)	Explain what GUI Testing means. Describe its main goals and the methods used to check that the graphical user interface works correctly, is easy to use, and looks consistent.	[5]	4	4
Q.5(a)	Explain the need for automated testing tools in software development.	[5]	4	2
Q.5(b)	Describe the major factors to consider when selecting a software testing tool for a project.	[5]	5	3

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