



PRESIDENCY UNIVERSITY

BENGALURU

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End - Term Examinations - December 2025

Date: 24 - 12- 2025

Time: 01:00pm - 04:00pm

School: SOCSE	Program: Information Science and Engineering		
Course Code: ISE2500	Course Name: Software Testing and Quality Assurance		
Semester: V	Max Marks: 100	Weightage: 50%	

CO - Levels	C01	C02	C03	C04	C05
Marks	26	26	24	24	-

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.

10Q x 2M=20M

1.	Differentiate between defect assigned state and defect open state.	2 Marks	L2	C01
2.	Describe waterfall model being not relevant in recent software process?	2 Marks	L2	C01
3.	Explain spiral model will consider risk in to development process?	2 Marks	L1	C01
4.	Describe automation of testing beneficial for web application and mobile app development?	2 Marks	L2	C02
5.	State the difference between quality control and quality assurance.	2 Marks	L1	C02
6.	What is the purpose of software testing in software development process?	2 Marks	L1	C02
7.	Define CMMI and how helps in quality of software	2 Marks	L1	C03
8.	List the main steps a defect goes through from finding to fixing.	2 Marks	L1	C03
9.	Explain key information should be included in a bug report template to ensure effective communication of the defect?	2 Marks	L1	C04
10.	Define QA and how it is important for software product	2 Marks	L1	C04

Part B

Answer the Questions.

Total Marks 80M

11.	a.	Explain following White Box Testing Techniques statement Coverage Branch Coverage Condition Coverage: Path Coverage Loop Testing	10 Marks	L2	CO1
	b.	Describe Regression Testing within the software development lifecycle? In what ways does it support maintaining software quality amid continuous updates? Highlight common challenges and outline effective strategies for implementing Regression Testing in Agile environments.	10 Marks	L2	CO1
Or					
12.	a.	Describe your approach to performing performance testing. What are the critical metrics you would measure to confirm that the system meets expected load requirements? Elaborate on the various performance testing methodologies employed to assess system performance.	10 Marks	L2	CO1
	b.	Explain Rapid Application Development (RAD) Model in terms of speed, flexibility, and the ability to handle changes. In what types of projects would this model be most useful, and why?	10 Marks	L2	CO1

13.	a.	Explain V-Model (Validation and Verification Model) is an extension of the traditional Waterfall model, where each development stage is directly associated with a corresponding testing phase. Illustrate the relationships between each development phase and its associated testing activity.	10 Marks	L2	CO2
	b.	Define test case for a university which launching a new student portal that allows students to manage their academic activities online. As part of the quality assurance process, test cases must be developed to validate the following functionalities: Student Login with Email and Password Viewing Semester Grades Online Course Registration For each functionality, define at least two test cases, including valid and invalid scenarios. Your test cases should clearly include the following components: Test Case ID Test Scenario Preconditions Test Steps Expected Result Actual Result	10 Marks	L2	CO2
Or					

14.	a.	Describe different stages involved in STLC? How do these stages contribute to effective defect detection and improved software quality?	10 Marks	L2	CO2
	b.	<p>Define test cases for case where you are tasked with testing a C program that calculates the next calendar date based on user-provided input for day, month, and year. The program should:</p> <ul style="list-style-type: none"> • Accept input values: Day (1–31), Month (1–12), Year (1812–2020) • Validate input ranges • Handle leap year logic for February • Calculate the next date with correct rollover to the next month or year • Display an error message if the resulting date exceeds 2020 <p>As a software tester, explain a comprehensive test plan that includes a set of test cases to validate the program’s logic. Use suitable testing techniques such as Boundary Value Analysis and Equivalence Partitioning. Clearly define each test case with its ID, description, input values, and expected output. Explain how your tests ensure the program functions correctly and handles edge cases effectively.</p>	10 Marks	L2	CO2

15.	a.	Explain quality assurance including its techniques, advantages, and examples.	10 Marks	L2	CO3
	b.	<p>Explain program that determines the type of triangle based on three given integer inputs, representing the sides of a triangle. The classification must adhere to the following criteria:</p> <ul style="list-style-type: none"> • Equilateral: All sides are equal • Isosceles: Exactly two sides are equal • Scalene: All sides are of different lengths • Invalid Triangle: The input does not satisfy the triangle inequality rule (i.e., the sum of any two sides must be greater than the third) <p>In addition to implementing the program, explain how to create a comprehensive set of test cases using the Decision Table Testing technique. Describe how each logical condition is verified within the code and illustrate how the decision table facilitates full coverage of all valid and invalid input combinations.</p>	10 Marks	L2	CO3

Or

16.	a.	<p>Describe the concept of Boundary Value Analysis (BVA) in software testing and demonstrate its application through a practical example. Use the scenario of a driving license application system, where eligible applicants must be between 18 and 60 years old, inclusive.</p> <p>Identify the test cases that would be derived using the BVA technique and explain the expected results for each case. Focus specifically on the edge values around the valid input range:</p>	10 Marks	L2	CO3
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		<ul style="list-style-type: none"> Lower Boundaries: 17 (invalid), 18 (valid - minimum), 19 (valid) Upper Boundaries: 59 (valid), 60 (valid - maximum), 61 (invalid) <p>Explain how BVA helps in identifying critical defects and why it is considered an effective black-box testing method.</p>			
	b.	Explain program that uses Boundary Value Analysis (BVA) to test adding two lengths (in feet and inches), where the resulting total length must be between 2 feet and 10 feet inclusive. Define: Input lengths in feet and inches. Function to convert the total to inches, perform addition, and then convert back. Apply Boundary Value Analysis test cases around critical points (min, just below min, min+1, max-1, max, just above max). program that adds two lengths in feet and inches, and performs Boundary Value Analysis (BVA) testing to ensure the result is between 2 feet and 10 feet inclusive.	10 Marks	L3	CO3

17.	a.	Explain different phases involved in the Defect Life Cycle. Describe how a defect progresses through each stage from identification to closure. Include detailed explanations of how defects are logged, assigned, fixed, retested, and ultimately resolved. Support your answer with examples of key actions and responsibilities associated with each stage of defect tracking and management.	10 Marks	L2	CO4
	b.	Discuss the benefits and limitations of incorporating test automation into the Software Development Life Cycle (SDLC). Highlight scenarios where automation is most effective, and mention commonly used automation tools. Additionally, identify the types of tests that are best suited for automation, providing relevant examples to support your explanation.	10 Marks	L2	CO4
Or					
18.	a.	Explain why it is essential to create well-written bug reports in the context of software testing? Describe the key components and best practices involved in writing clear and effective bug reports. Support your explanation with a sample bug report that illustrates how detailed reporting can help developers identify and resolve issues efficiently.	10 Marks	L2	CO4
	b.	Define software testing metrics and explain how they contribute to evaluating software quality. Discuss the significance of key metrics such as defect density, test case effectiveness, and defect leakage, and how they help in monitoring the testing process and improving the overall quality of the software.	10 Marks	L2	CO4