PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Fourth Semester)

Branch - **COMPUTER SCIENCE**

SOFTWARE ENGINEERING & TESTING

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Select the option that does not describe a characteristic of a good Software Engineer. a) Strong problem-solving skills b) Excellent communication skills c) Aversion to change and new technologies d) Teamwork and collaboration	K1	CO1
	2	Identify the Agile principle that emphasizes the importance of regular feedback and adjustments. a) Deliver working software frequently. b) Welcome changing requirements, even late in development. c) Continuous attention to technical excellence. d) At regular intervals, the team reflects on how to become more effective.	K2	CO1
2	3	What does "LOC" stand for in the context of software project estimation? a) Lines of Code b) Levels of Complexity c) Logic of Computation d) Limits of Capability	K1	CO2
	4	Determine the estimation technique that relies on historical data from past projects to predict the effort required for a new project. a) LOC-Based Estimation b) Expert Judgment c) COCOMO Model d) Function Point Analysis	K2	CO2
3	5	Identify the option that is NOT a key characteristic of a mature organization as defined by the Capability Maturity Model (CMM). a) Defined b) Managed c) Chaotic d) Optimized	K1	CO3
	6	Recognize the software development lifecycle model that emphasizes iterative development and frequent customer feedback. a) Waterfall Model b) Agile Model c) V-Model d) Spiral Model	K2	CO3
4	7	Point out the option that is NOT a common integration testing strategy. a) Big Bang Integration b) Top-Down Integration c) Bottom-Up Integration d) Waterfall Integration	K1	CO4
	8	Describe the key principle of Extreme Programming (XP), an agile testing methodology. a) Extensive documentation b) Delayed testing c) Test-driven development (TDD) d) Waterfall approach to testing	K2	CO4
5	9	State the option that is NOT typically included in a comprehensive test plan document. a) Test objectives and scope b) Risk assessment and mitigation strategies c) Detailed source code listings d) Testing schedule and resources	K1	CO5

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5	10	List the components that should be included in a well-written test case. a) Test ID, Test Steps, Expected Result, Actual Result b) Only the expected result c) Only the test steps d) Only the test ID and test steps	K2	CO5

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Outline the concept of software architecture and its significance in the software development lifecycle. Analyze the key characteristics of a well-designed architecture, such as modularity, maintainability, and scalability.	K2	CO1
		(OR)		
	11.b.	Describe the concepts of cohesion and coupling in software design. Examine how these concepts relate to the principles of modularity and their impact on the maintainability, reusability, and testability of software		
2	12.a.	Assess the significance of both black box and white box testing techniques in ensuring software quality. Justify how these techniques work together and contribute to the overall effectiveness of the software testing process.	K3	CO2
		(OR)		
	12.b.	Evaluate the concept of LOC-based estimation in software project management. Discuss the advantages and limitations of this technique.		
3	13.a.	Compare the Waterfall model and the Agile development model. Analyze the suitability of each model for different types of software projects.	K3	CO3
		(OR)		
	13.b.	Examine the concepts of verification and validation in software development. Discuss the different types of testing activities and how they contribute to the verification and validation process.		
4	14.a.	Critique the different strategies for integrating software modules, such as top-down integration, bottom-up integration, and big bang integration. Analyze the advantages and disadvantages of each strategy.	K4	CO4
		(OR)		
	14.b.	Justify different types of performance testing, and their objectives. Assess how performance testing results contribute to identifying and resolving performance bottlenecks, ensuring the system meets the specified non-functional requirements.		
5	15.a.	Evaluate the key elements of an effective test case specification, including test case ID, test data, expected results, and preconditions.	K4	CO5
		(OR)		
	15.b.	Synthesize the importance of selecting appropriate test automation tools and integrating them effectively with the development and testing processes. Analyze how the right tools can enhance the efficiency and effectiveness of the testing lifecycle.		

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SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Justify the core principles of Agile development and assess how they are reflected in practices such as iterative development, daily stand-up meetings, and continuous integration.	K4	CO1
2	17	Evaluate the critical role of risk management in successful software project management. Analyze various types of risks that can impact a software project.	K4	CO2
3	18	Critique the Capability Maturity Model Integration (CMMI) framework as a model for software process improvement. Analyze the different process areas defined by CMMI and how they contribute to organizational maturity.	K4	CO3
4	19	Assess the critical role of performance testing in ensuring the scalability and reliability of a software system, particularly in today's cloud-based and distributed environments. Analyze how different performance testing methodologies evaluate the system's behavior under various conditions.	K5	CO4
5	20	Formulate the concept of "shift-left testing" and its relevance in modern software development. Analyze how testing activities can be integrated throughout the software development lifecycle, starting from the requirements gathering phase.	K5	CO5

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