

**JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT**

**TEST -3 EXAMINATION- 2025**

**M.Tech-II Semester (CSE/IT)**

**COURSE CODE (CREDITS):10M11CI213(3)**

**MAX. MARKS: 35**

**COURSE NAME: Advanced Software Engineering**

**COURSE INSTRUCTORS: Ms. Palak Aar**

**MAX. TIME: 2 Hours**

**Note: (a) All questions are compulsory.**

**(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems.**

Q. No	Question	CO	Marks
Q1	A project size of 200 KLOC is to be developed. The Software development team has average experience on similar types of projects. The project schedule is not very tight. Calculate the effort, development time, average staff size and productivity of the project.	2	[5]
Q2	Write Short notes on the following: a) Data Re- Engineering b) Cleanroom Software Development c) CASE Tools d) Design Patterns	2, 3	[10]
Q3	a) Which categories of testing are primarily used for verification and validation in software development? Additionally, what are three common types of errors that static analysis can detect?	3,4	[4]
	b) What are the key challenges in reverse engineering legacy systems, and how do current tools and techniques address issues related to incomplete or undocumented codebases?		[4]
Q4	a) A startup is deciding between building a throwaway prototype or an evolutionary prototype for their new social media app. What factors should influence their choice, and how would each approach impact project cost and quality?	2	[4]
	b) A software module of size 50 KLOC has 125 defects reported during testing. Calculate the defect density. Out of 200 test cases, 150 were executed and 120 passed. Calculate the test execution coverage and pass percentage.		[4]
Q5	An airline reservation system built in COBOL faces integration issues with modern booking platforms. The business needs to upgrade the system architecture without losing existing functionalities. Design a software re-engineering process flow that captures the detailed activities for understanding, restructuring, and updating this system.	3, 4	[4]