

**Pokhara Engineering College
Internal Assessment**

Level : Bachelor
Program : Computer (Sem 5)
Subject : Software Engineering

Year: 2025
Full Marks: 100
Pass Marks: 45
Time: 3 hrs.

Candidates are required to give answers in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define Software and software risks. What kind of software risks can occur during software project management? How do you handle such risks? 7
- b) What is software project cost estimation? A project size of 200 KLOC is to be developed. Software development team has average experience on similar type of projects. The project schedule is not very tight. Using COCOMO model, calculate the Effort, development time, average staff size, and productivity of the project. 8

Project	a	b	c	d
Organic	2.4	1.05	2.5	0.38
SemiDetatched	3.0	1.12	2.5	0.35
Embedded	3.6	1.2	2.5	0.32

2. a) List any five classical software development model. Introduce each of them with their figure and mention their best usecase. 7

Or

Define agility. How SCRUM model can be used for software development. Explain.

- b) How Quality assurance differs with Quality Control? Explain the CMMI model for software quality management. 8
3. a) What are functional and non-functional requirements? Explain with examples of each. What sort of feasibility study would you carry out before software development? Explain. 7
- b) Draw a use case diagram for below scenario. 8

A customer visits online shopping portal. A customer may buy item or just visit the page and logout. The customer can select a segment, then a category and brand to get different products in the desired brand. The customer can select product for purchasing. The process can be repeated for more items. Once the customer finishes selecting the product/s, the cart can be viewed. If the customer wants to edit the final cart it can be done here. For final payment, the customer has to login to portal. If the customer is visiting for the first time, he must register with the site, else the customer use login page to proceed. Final cart is submitted for payment and card details and address details are to be confirmed with customer. Customer is confirmed with the shipment id and delivery of goods within 15 days.

4. a) How class diagram is constructed? Explain the entire symbols, attributes, operations and relationships with reference to a Library Management System. 7

Or

Discuss on a sequence diagram for a ATM system.

- b) Explain the Layered Architecture and Repository architecture with suitable diagrams. 8
5. a) Explain the different levels of software testing in brief. 7
- b) What is software validation and software verification? Explain the Boundary Value Analysis (BVA) mechanism, with a code example and design a test case for it. 8
6. a) What are software configuration items (SCI)? Explain the change management process in Software Configuration Management (SCM) with suitable figure. 7
- b) Introduce Software reuse. Discuss the different types of software reuse. 8
7. Write short notes: (any two) 10
 - a) Design Patterns
 - b) Refactoring and Pair programming
 - c) Cyclomatic Complexity