

615440-NEP

262(B)N

**B. Sc. (Fifth Semester)
EXAMINATION, 2025-26**

**COMPUTER SCIENCE
(Software Engineering)**

Time : Two Hours]

[Maximum Marks : 70

Note :

- (i) Attempt any five questions from Section (A) and three questions from Section B.
- (ii) Answer each question of Section (A) within 50 words.
- (iii) Limit your answer within the given answer book. Additional answer book (B-Answer book) should not be provided.

SECTION – A

Note : Attempt any five question. Each question carries 5 marks.

1. Define Software Engineering. Explain how it differs from conventional programming.

(1)

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2. List and briefly explain the different phases of the Software Development Life Cycle (SDLC).
3. What are functional and non-functional requirements? Give one example of each from a Library Management System.
4. Differentiate between coupling and cohesion in software design. Explain their impact on software quality.
5. What is white-box testing and black-box testing? State one advantage and one limitation of each approach.
6. Explain the importance of software metrics in software project management. Provide two examples of product metrics.
7. What is the critical path in project scheduling? Explain with a small illustrative diagram.

SECTION – B

Note : Attempt any three question. Each question carries 15 marks.

8. (a) Explain the Waterfall Model and Spiral Model of software development. Compare their advantages and disadvantages. (8)

(2)

Contd.

- (b) Why is the Spiral Model considered more risk-driven? Illustrate your answer with an example. (7)
9. (a) Develop a Use Case Diagram and a Context Level DFD for an Online Banking System. (8)
- (b) Explain the steps involved in Requirement Elicitation and discuss the challenges faced during this process. (7)
10. (a) A software project is estimated to have 30,000 lines of code (LOC). Using the Basic COCOMO Model, estimate the Effort (in person-months) and Development Time (in months) for the organic mode, given :
- $$\text{Effort} = 2.4 \times (K\text{LOC})^{1.05}$$
- $$\text{Time} = 2.5 \times (\text{Effort})^{0.38} \quad (8)$$
- (b) Explain the advantages and limitations of using COCOMO for software estimation. (7)
11. (a) Explain the principles of Modular Design. Discuss the role of Abstraction, Encapsulation, and Modularity in system design. (8)
- (b) Differentiate between Data Flow-Oriented Design and Object-Oriented Design with suitable examples. (7)