



বাংলাদেশ আর্মি ইন্টারন্যাশনাল ইউনিভার্সিটি অব সায়েন্স এন্ড টেকনোলজি, কুমিল্লা
BANGLADESH ARMY INTERNATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY (BAIUST), CUMILLA

Mid Term Examination, Spring 2025
Department of Computer Science and Engineering
Level-3 Term-I
Course Code: CSE-317
Course Title: Software Engineering and Design Patterns
Credit Hour: 03
Exam Duration: 1 hour 30 Minutes
Full Marks: 90

Notes:

- a. Figure on the right of each question indicates the marks for the respective question.
- b. The Course Outcomes are:
CO1: Explain the fundamental concept of software engineering.
CO2: Identify the project requirement, project risk, and make a mitigation plan.
CO3: Design the software architecture
CO4: Assess the software quality
CO5: Estimate the project cost and time schedule.

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1. (a) Analyze how software engineering methodologies influence the success or failure of large-scale IT projects. Provide examples of common pitfalls when these methodologies are ignored. [CO1→C4] 15
 - (b) Evaluate the ethical responsibilities of software engineers in ensuring privacy and security during software development. How do engineering practices help uphold these responsibilities? [CO1→C5] 15
 2. (a) Suppose a software development team is tasked with building a library management system for BAIUST. The project has well-defined and stable requirements, covering features like book issuance, returns, fines, inventory, and reporting. It must be completed within six months, with fixed deadlines for each phase and minimal client involvement after the initial requirement gathering. 30
 - i. Justify whether the **Waterfall model** is appropriate for this project. [CO2→C2]
 - ii. Midway through the project, the university unexpectedly requests to add a digital payment gateway for fines. Analyze how this late change would affect each phase of the Waterfall model. [CO2→C4]
 - iii. Break down the 6-month timeline into Waterfall phases with estimated durations. Justify the time allocation for each phase based on the system's complexity and known constraints. [CO2→C5]

OR

(a) Suppose you are building a **smart education platform** for rural schools with limited internet access and evolving user needs. The client demands early working versions and frequent updates based on real-time feedback. A pilot test revealed usability issues and feature requests. 30

- i. Critically evaluate why the **Iterative model** would be more effective in this context. Support your answer with specific project characteristics. [CO2→C2]
- ii. Given limited bandwidth and device memory in rural schools, list and justify the **top five features** to be included in the first iteration. [CO2→C4]
- iii. Identify and categorize at least four risks (technical, social, logistical, financial) associated with deploying iterative development in rural environments. [CO2→C4]

3. (a) Your university plans to develop a smart bus tracking and booking system with real-time tracking, seat booking, notifications, and route viewing features. Since the university and students are unsure about interface design and features, with varied feedback, the team opts to use the Prototype Model to create and improve the system iteratively. 30

- i. Describe the steps you would follow to develop and improve the prototype based on student and admin feedback. [CO2→C3]
- ii. How would you prioritize conflicting feature requests from different student groups during the prototype feedback phase? [CO2→C4]
- iii. What are two risks of relying too heavily on prototype feedback, and how can they be managed? [CO2→C4]