



SCHOOL OF COMPUTER SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - I
FALL SEMESTER 2025-2026

Programme Name & Branch : B.Tech, Computer Science and Engineering and Business Systems
Course Code and Course Name : CBS1005, Software Engineering Methodologies
Faculty Name(s) : Prof. Adrija Bhattacharya
Class Number(s) : VL2025260103268
Date of Examination : August 21, 2025
Exam Duration : 90 minutes
Maximum Marks:50

General instruction(s):

- Answer All Questions
- M- Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes: (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)
 - 1 - Apply the system development life cycle for any Business system.
 - 2 - Establish software project management activities such as planning, scheduling and Estimation for the business system.
 - 3 - Specify the business requirements through appropriate system analysis and design

Q.No	Question	M	CO	BL
1.	CrossOver is a startup company. It needs to develop a customer relationship management (CRM) system rapidly to respond to competitive market changes. The end users are actively involved in providing requirements and feedback. Requirements are expected to evolve and change frequently. The project demands quick delivery with main initial draft of the software and reuse of existing components. As the project manager: (a) Identify the most suitable software process model for this scenario and justify your choice. [5] (b) Identify all the activities of the project and prepare a sample Gantt chart for the early phases, showing the timeline for key activities. [5]	10	2	3
2.	XYZ Retail Corp. invested in online sales platform. The project was delivered on time. But soon after launch, users faced frequent errors during checkout, slow page loads, and occasional data loss. Feedback from customers was very negative. Finally it has resulted in lost sales and significant reputational damage. As the team leader, analyze the reasons behind the project's failure. What steps could have been taken to make successful software? What are the management knowledge areas a manager has to focus on?	10	1	2
3.	A project has the following activity durations (in days)	5	2	5
		5		



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Activity	Optimistic (O)	Most Likely (M)	Pessimistic (P)	Predecessor
A	3	4	5	-
B	2	5	8	A
C	4	6	10	A
D	3	4	9	B,C
E	1	2	3	C

- (a) Calculate the expected time and variance for each activity. [3]
(b) Identify the critical path and total expected project duration. [5]
(c) Calculate the probability that the project will be completed in 16 days or less. [2]

4. A software project is estimated to contain 50 KLOC (thousand lines of code). The project is of the semi-detached type. The following cost driver multipliers (Effort Adjustment Factor, EAF) apply for the project:

Cost Driver Category	Multiplier
Required Software Reliability	1.1
Database Size	1.08
Product Complexity	1.15
Run-time Performance	1
Analyst Capability	0.86
Programming Language Experience	1
Software Tools	0.9

Given the constants for the semi-detached mode as:
 $a=3.0$, $b=1.12$, $c=2.5$, $d=0.35$

Calculate:

- (a) The Effort Adjustment Factor (EAF) [2]
(b) The estimated effort in person-months (PM) using the Intermediate COCOMO formula. [3]
(c) The estimated development time in months. [3]
(d) The average number of personnel required. [2]

5. Consider yourself as a requirements analyst for a new online learning management system (LMS). Identify the Stakeholders in the system. Further explain how you would use scenarios or use cases during requirement elicitation, and how these will be represented in the SRS?
