AHMEDABAD UNIVERSITY
School of Engineering and Applied Science
2025-2026 Winter Semester

CSE408 Software Engineering
Mid-Term Examination
Saturday 28 February 2026. 08:00 AM– 09:00 AM

Name:	Roll no.	A	U	2							Marks /40

Instructions: This is an online examination conducted on a Learning Management System (LMS). Duration of the exam: 50 minutes; Total marks: 40; Total questions: 40. It is a closed-book examination. Therefore, students are not allowed to exchange or refer to any online or printed material/book during the examination. This exam has 20% weightage in the final course evaluation.

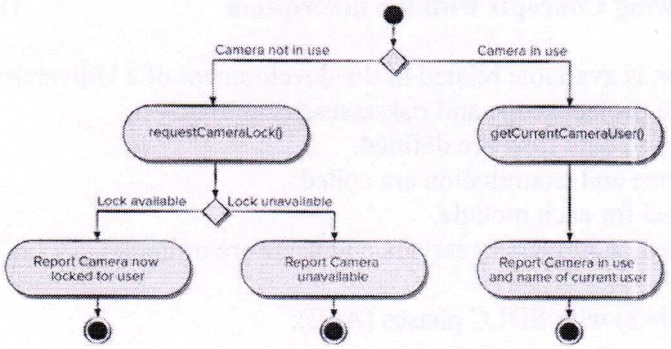
Q.1 Answer the following questions. [1 Mark for correct answer; some of these questions has multiple correct answers; 25% Negative for each wrong answer]

Which of the following are examples of performance requirements?
A. The system shall support 1000 concurrent users
B. The system shall complete payment processing within 5 seconds
C. The system shall provide a login page
D. The system shall allow data export to PDF
ANSWER: _____

E-Learning Platform software is developed around following entities: Student, Course, Instructor, Assignment and Submission. Following details related to the system is available:
- A course is taught by multiple instructors.
- A student enrolls in multiple courses.
- Each assignment belongs to exactly one course.
- A student submits assignments.
- Submission stores submission date and marks.
- A student can submit only once per assignment.

To enforce one submission per student per assignment, identify most suitable key from the following list:
A. Submission_ID
B. Student_ID
C. Assignment_ID
D. Combination of Student_ID and Assignment_ID
ANSWER: _____

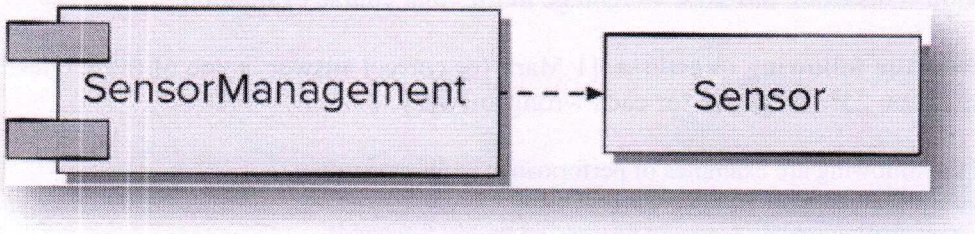
Following diagram is prepared during the development of the SafeHome Security Project, representing one of the feature related to the camera. In context of the software engineering-design phase, identify the category of this diagram.



A. Activity diagram
B. Class diagram
C. Sequence diagram

D. Architectural diagram
E. E-R diagram
ANSWER: _____

Following diagram is prepared related to the SafeHome Security project. In context of the software engineering, what is the category of this diagram?



A. UML Activity diagram
B. UML Class diagram
C. UML Sequence diagram
D. UML Architectural diagram
E. UML Component diagram
ANSWER: _____

Which of the following are functional requirements? [0.25 negative for each wrong answers]
A. The system shall respond within 2 seconds
B. The system shall encrypt user passwords
C. The system shall allow users to generate monthly reports
D. The system shall operate on Windows and Linux
E. The webpage load time shall be less than 5 seconds
ANSWER: _____

Non-functional requirements mainly describe:
A. System constraints and quality attributes
B. Performance and security standards
C. Business logic algorithms
D. Database table relationships
ANSWER: _____

Q.2 Match the following Concepts with it's description [1 Mark for correct answer]

Following information is available related to the development of a University ERP System:
-Stakeholders approve project scope and risk assessment plan.
-System components and data flow are defined.
-Modules for attendance and examination are coded.
-Unit tests are executed for each module.
-The system is installed on university servers and users are trained.

Match the activities (1–5) with SDLC phases (A–E):

1. Scope approval and risk assessment	A. Deployment
2. Defining components and data flow	B. Implementation

3. Coding modules C. Testing
4. Executing unit tests D. Planning, Requirement Analysis
5. Installing system and user training E. Design

A. 1-D, 2-E, 3-B, 4-C, 5-A
B. 1-E, 2-D, 3-B, 4-C, 5-A
C. 1-D, 2-B, 3-E, 4-C, 5-A
D. 1-D, 2-E, 3-C, 4-B, 5-A
ANSWER: _____

Match the following (Entities and Definitions):
A. Strong Entity 1. Collection of similar objects in a database
B. Weak Entity 2. Real-world object about which data is stored
C. Entity Set 3. Depends on another entity for existence
D. Entity 4. Has a primary key and exists independently

A. A-4, B-3, C-1, D-2
B. A-3, B-4, C-2, D-1
C. A-4, B-1, C-3, D-2
D. A-2, B-3, C-4, D-1
ANSWER: _____

Match the following (Attribute Types and Meaning):

A. Simple Attribute : Cannot be divided further
B. Single-Valued Attribute : Holds only one value per entity
C. Multi-Valued Attribute : Can store more than one value for an entity
D. Composite Attribute : Has sub-parts
E. : used to enhance system performance
F. : used to reduce download time

Match the following Concepts with it's description:
A. Structural Diagram : Shows system architecture
B. Behavioral Diagram : Illustrates how objects behave in response to events
C. UML Documentation Benefit : Acts as a reference for future maintenance
D. Class diagrams : Represent structure of the system
E. : Represent details about multi-valued attributes

Q.3 Answer the following questions. **[1 Mark for correct answer]**

In the Waterfall model, which phase comes immediately after Requirement Analysis?
A. Testing
B. Maintenance
C. Design
D. Deployment

Agile methodology emphasizes on the _____ .

A. comprehensive documentation over working software.
B. customer collaboration and iterative development.
C. completing the project in a single phase.
D. no testing process.
E. strictly sequential phases in development.

A feasibility study in SDLC is conducted to:
A. Debug the program
B. Check whether the project is practical and viable
C. Install the software
D. Train the users

Which of the following is an advantage of the Waterfall model?
A. Easy to accommodate changing requirements
B. Simple and easy to understand
C. High flexibility
D. No documentation required

Which model is most appropriate for projects with well-defined requirements and a low probability of changes during development?
A. Scrum
B. Waterfall
C. Spiral
D. Kanban

What does the term "Agile Manifesto" prioritize over "following a plan"?
A. Comprehensive documentation
B. Contract negotiation
C. Responding to change
D. Process and tools

In Scrum, what is the purpose of the Daily Stand-up?
A. To assign tasks to developers
B. To provide a status update to the client
C. To synchronize activities and identify blockers
D. All of these

Which of the following best defines the primary goal of the "Sprint Planning" meeting in Scrum?
A. To review the work completed in the previous sprint and demonstrate it to stakeholders.
B. To determine which items from the product backlog will be delivered and how that work will be achieved.
C. To conduct a deep dive into technical debt and refactor the codebase.
D. To provide a status update to the Project Manager regarding individual performance.

What is the main difference between "Agile" and "Waterfall" regarding project planning?
A. Waterfall plans once at the start, while Agile plans iteratively throughout the project.
B. Agile does not require any planning, whereas Waterfall is documentation-heavy.
C. Waterfall planning happens daily, while Agile planning happens only once a month.

D. Agile planning is done only by the customer, while Waterfall planning is done by the team.

During a "Sprint Retrospective," the team focuses on:
A. Demonstrating the "Done" increment to the stakeholders for feedback.
B. Adding new high-priority features to the Product Backlog.
C. Inspecting how the last Sprint went and identifying improvements for the next one.
D. Estimating the story points for the next batch of user stories.

Which of the following is NOT a Scrum event?
A. Sprint Planning
B. Daily Scrum
C. Sprint Review
D. Risk Analysis Meeting

Which key activity in Software Project Management involves identifying, analyzing, and responding to potential problems that could negatively affect the project?
A. Configuration Management
B. Risk Management
C. Quality Assurance
D. Resource Allocation

In an e-commerce project, the SRS states: "The system shall allow users to place orders and make payments using credit/debit cards." This requirement is classified as:
A. Non-functional requirement
B. Design constraint
C. Functional requirement
D. Interface constraint

Which diagram best represents how data moves through a system?
A. ER Diagram
B. DFD
C. Architecture Diagram
D. Class Diagram

Which of the following is NOT a valid attribute type in ER modelling?
A. Composite attribute
B. Multivalued attribute
C. Derived attribute
D. Recursive attribute

Interface Design in Software Engineering primarily focuses on:
A. Writing optimized algorithms for faster execution
B. Designing database schemas for data storage
C. Creating clear and efficient interaction mechanisms among software, hardware, and users
D. Reducing system memory consumption

Which of the following is NOT a key aspect of Interface Design?
A. User Interface

B. Software Interface
C. Hardware Interface
D. Database Normalization

Which of the following best represents a Software Interface?
A. A scanner receiving electrical signals
B. A module calling another module's function
C. A user clicking a submit button
D. A sensor detecting temperature

Which scenario best demonstrates User Interface design?
A. Defining API request and response formats
B. Designing a dashboard layout for customer interaction
C. Writing firmware for a printer
D. Configuring communication protocols between servers

Component-Level Design is performed mainly to:
A. Begin actual coding immediately
B. Replace system architecture design
C. Explain how each component works internally before coding
D. Eliminate the need for testing

Which of the following best represents a weak entity?
A. Student with StudentID
B. Product with ProductCode
C. Dependent of an Employee without its own unique identifier
D. Bank account with AccountNumber

A strong entity must:
A. depend on another entity for identification.
B. have at least one multi-valued attribute.
C. possess a primary key.
D. contain only composite attributes.
E. have non-zero value.

Which of the following statements is FALSE?
A. Attributes are fields in a database table.
B. A key attribute uniquely identifies an entity.
C. A multi-valued attribute can store only one value per entity.
D. A strong entity can exist independently.

Which of the following correctly matches the concept?
A. Derived Attribute – Stored permanently in the database
B. Composite Attribute – Cannot be subdivided
C. Key Attribute – Uniquely identifies an entity
D. Weak Entity – Exists independently

A development team completes all Sprint Backlog tasks but fails to achieve the Sprint Goal. What does this indicate?
A. The sprint is automatically successful
B. Tasks were poorly aligned with the Sprint Goal
C. The Definition of Done was incorrect
D. Velocity was too low

A company wants to ensure that an email address follows proper format before insertion. Which is the most robust approach?
A. NOT NULL constraint
B. UNIQUE constraint
C. CHECK with pattern validation
D. Index on email column

In context of data design, if Doctor_ID is used as primary key and each doctor belongs to exactly one department, Department_ID in Doctor entity is:
A. Primary key
B. Multivalued attribute
C. Foreign key
D. Derived attribute

Consider the following scenario: A library maintains records of Books, Members, Authors, and Loans. A book can have multiple authors. Each book has unique ISBN number. A member can borrow multiple books. Each loan records issue date and return date. In this scenario, which attribute should be the primary key of the Book entity?
A. Title
B. ISBN
C. Author Name
D. Publisher
E. Author ID

Consider the following scenario: An online shopping system includes Customer, Order, Product and Payment features. Each order contains multiple products. A customer can place multiple orders. Each product can appear in many orders. Each order has exactly one payment. In this system implementation scenario, the relationship between Customer and Order is:
A. 1:1
B. 1:N
C. N:1
D. M:N