



## Avinashilingam Institute for Home Science and Higher Education for Women

Deemed to be University Estd. u/s 3 of UGC Act 1956, Category 'A' by MHRD (now MoE)

Re-accredited with 'A++' Grade by NAAC. CGPA 3.65/4, Category I by UGC

Coimbatore - 641 043, Tamil Nadu, India

### Continuous Internal Assessment Test I – February 2025 Semester-II

**Class:** I P.G.  
**Branch:** MBA (IT&SM)

**Time:** 2 Hours  
**Max. Marks:** 60

#### 24MBMC15 System Analysis and Design

#### Course Outcomes:

1. Understand and apply various software development life cycle models and methodologies.
2. Analyze and document system requirements using structured representation techniques.
3. Design and test software systems using appropriate design methods and testing strategies.
4. Apply object-oriented modelling techniques using UML for system development.
5. Design and develop effective user interfaces and system components using object-oriented methods.

#### PART A (6 x 1 = 6)

#### Choose the Correct Answer

1. Which SDLC model is most suitable when requirements are well-defined and not likely to change? CO1 K1
  - a) Spiral Model
  - b) Agile Model
  - c) Waterfall Model
  - d) Prototype Model
2. Which phase of SDLC are the functional & non-functional requirements identified? CO2 K1
  - a) Design Phase
  - b) Requirements Analysis Phase
  - c) Testing Phase
  - d) Implementation Phase
3. What does a Data Flow Diagram (DFD) represent? CO2 K1
  - a) Data relationships
  - b) Data storage details
  - c) Data movement in a system
  - d) Software testing techniques
4. Which of the following is NOT an Agile methodology? CO1 K1
  - a) Scrum
  - b) Extreme Programming (XP)
  - c) Waterfall
  - d) Kanban
5. What does ISO 12207 standardize? CO1 K1
  - a) Requirements elicitation techniques
  - b) Life cycle processes for software
  - c) Programming languages
  - d) Database design principles
6. Which diagram in structured requirement representation shows relationships and cardinality between data entities? CO2 K1
  - a) Data Flow Diagram (DFD)
  - b) Entity-Relationship Diagram (ERD)
  - c) Use Case Diagram
  - d) Flowchart

**PART B (3 x 6 = 18)**  
**Answer ALL questions**

(Each answer should not exceed 400 words or two pages)

7. a. Compare the Waterfall model and Agile model, highlighting their strengths and limitations. CO1K2  
Or
- 7.b. Explain the purpose and phases of the Rational Unified Process (RUP) in SDLC. CO1K2
8. a. What are functional and non-functional requirements? Provide examples of each in a software project. CO2K2  
Or
- 8.b. Discuss the role and structure of IEEE standards in software development processes. CO2K2
9. a. Describe the significance and elements of a Data Flow Diagram (DFD) with an example. CO2K3
- 9.b. Explain the role of an Entity-Relationship Diagram (ERD) in system analysis. Illustrate cardinality and optionality. CO2K3

**PART C (3 x 12 = 36)**  
**Answer ALL questions**

(Each answer should not exceed 800 words or four pages)

10. a. Discuss the various phases of the System Development Life Cycle (SDLC) with suitable examples. CO1K3  
Or
- 10.b. Explain the Spiral model in detail. How does it address risk management in software development? CO1K3
- 11.a. Describe Agile software development. Discuss its principles and compare it with traditional SDLC models. CO1K3  
Or
- 11.b. Explain the ISO 12207 life cycle standard. How does it contribute to software development processes? CO2K3
12. Case Study (Compulsory) CO2K5  
Scenario:  
A software development company is building an e-commerce application. The client wants the application to handle online payments, product recommendations, and a real-time inventory system. The client also requests that the application be delivered in 3 months. The development team proposes using Agile methodology with frequent client interactions.

**Questions:**

- a) What challenges might arise during requirements elicitation for this project?
- b) How would Agile help the development team meet the tight deadline?
- c) Explain the role of documenting both functional and non-functional requirements in this scenario.
- d) Suggest additional SDLC models that could be considered for such projects, and justify your choices.

**Prepared by:** Dr. D. Arthi  
**Number of Copies required:**55