**Name:**

**Enrolment No:**

**UPES**

**End Semester Examination, DEC 2024**

**Course: MCA** **Semester: III**

**Program: OOPS ANAYSIS AND UML DESIGN** **Time : 03 hrs.**

**Course Code: CSEG8007** **Max. Marks: 100**

**Instructions: ANSWER ALL THE QUESTIONS**

**SECTION A**
**(5Qx4M=20Marks)**

| S. No. | | Marks | CO |
|---|---|---|---|
| Q 1 | Discuss the applications of the concepts process and thread in a real-world system. Explain their notations and modeling mechanisms in UML. | | **CO1** |
| 2. | Explain the common modeling mechanisms of deployment diagrams | | **CO5** |
| 3. | Explain how to model behavior of an element with use cases. | | **CO3** |
| 4. | Consider the building of a house. Explain the concept of Modularity and how modularity helps better work allocation and better performance | | C04 |
| **5.** | Explain about forking and joining concepts in activity diagram with an example | | **C02** |

**SECTION B**
**(4Qx10M= 40 Marks)**

| | | | |
|---|---|---|---|
| 6. | a) Define UML. How it is used? What actually it deals about and its contents? [5]<br>b) Draw a Class diagram for Online Railway Reservation System with analysis.[5] | | **CO1**<br>**CO2** |
| 7. | a) Discuss the difference between UML's Extend and Include relationships in use case diagrams, with examples. [5]<br>b) Explain how state diagrams work, with an example involving a login/logout system for a website.[5] | | **CO1**<br>**CO3** |
| 8. | a)Write the five standard stereotypes that can be applied to components in UML. [7M]<br>b) Draw the deployment diagram for online shopping management system. | | **CO1**<br>**CO5** |
| 9. | a) How do you model the lifetime of an object? Explain. [7M]<br>b) Draw the state chart diagram for airline management system | | **CO4**<br>**CO3** |

| SECTION-C<br>(2Qx20M=40 Marks) | | | |
|---|---|---|---|
| Q | | | |
| 10. | Design an Online Library Management System through the following diagram types.<br>**Use Case Diagram (20 Marks)**<br>**Develop a Use Case Diagram** that captures the primary functionality of an online library management system.<br>o **Actors**: Include common actors such as Librarian, Member, and Administrator.<br>o **Use Cases**: Examples include Register Member, Search Book, Borrow Book, Return Book, and Manage Inventory.<br>o **Relationships**: Show relationships like Include and Extend where applicable.4<br>**Sequence Diagram**<br>**Construct a Sequence Diagram** for the scenario where a member searches for and borrows a book.<br>o **Participants**: Include objects such as Member, Librarian, Book, Inventory System, and Notification System.<br>o **Messages**: Depict messages like searchBook(), checkAvailability(), issueBook(), and notifyMember().<br>o **Return Messages**: Show return messages indicating outcomes (e.g., success or failure of borrowing due to availability).<br>**Collaboration Diagram (20 Marks)**<br>**Develop a Collaboration Diagram** for the scenario where a librarian manages the inventory.<br>o **Participants**: Include objects such as Librarian, Book, Inventory System, and Supplier.<br>o **Interactions**: Show interactions for tasks like addNewBook(), updateStock(), and removeBook().<br>o **Numbered Interactions**: Use numbering to indicate the order of messages exchanged between objects. | | **CO5** |
| 11. | a) Discuss the parameters that lead to organized and disorganized complexities. [7M]<br>b) Verify the validity of the statement "software system is inherently complex." [7]<br>c) Illustrate the Similarities between Sequence and Collaboration diagram with a case study.(6) | | **CO4** |