

- N.B. :** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** question out of remaining **six** questions.
 (3) Make **suitable** assumptions wherever **necessary** and **state** them.

1. A library lends books and magazines to members, who are registered in the system. Also it handles the purchase of new titles for the Library. Popular titles are brought in multiple copies. Old books and magazines are removed when they are out of date or in poor condition. A member can reserve a book or magazine that is not currently available in the library, so that when it is returned or purchased by the library, that person is notified. The Library can easily create, update and delete information about the titles, members, loans and reservations in the system. 20
 Construct the use case diagram and class diagram for above scenario.
 Construct a sequence diagram for the use case lend item (without considering the reservation).
2. (a) State UML dynamic diagrams. Explain any one in detail with example. 10
 (b) Construct the class diagram for Cellular phone. 10
3. (a) Name and explain in short Five Room diagrams. 10
 (b) What is Usecase Realization ? Explain with suitable example. 5
 (c) What is model ? Why do we need to model a problem ? Briefly describe static model and dynamic model. 5
4. (a) Explain the following with suitable examples : Association, Aggregation, Multiplicity, Generalization, Inheritance. 10
 (b) Explain boundary class, entity class and control class with UML notations. 10
5. (a) Explain object oriented metrics and testing. 10
 (b) Explain different types of coupling and cohesion. 10
6. (a) How deployment diagrams are useful in modeling a fully distributed system ? 10
 (b) State and explain various steps in OO design process. 10
7. (a) Construct the activity diagram for trading system which should take care of sales information of the company and must analyze the potential of trade. 10
 (b) Construct the Use case diagram for the above scenario. 10