

**ADCA/MCA (III Yr)**

**Term-End Examination**

**December, 2010**

01463

**CS-16 : OBJECT ORIENTED SYSTEMS**

*Time : 3 hours*

*Maximum Marks : 75*

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*Note : Question number 1 is compulsory. Answer any three from the rest.*

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1. (a) A library in a University is having provision to issue books to students and staff. It collects different penalties from both categories in case of late return of books. The library also manages different registers which hold information about members, books, magazines, newspapers, penalties collected etc. manually. The Library needs a system to maintain the registers as well as for performing transactions such as issue and return of books, etc. Identify classes for the system and draw the class diagram. Add three attributes and three operations to the classes. Explain the classes as well as associations, if any. Make necessary assumptions. 10

- (b) What is a Nested State diagram and a Flat State diagram? Give an example of each. 10
- (c) What is a use-case diagram? Draw a use-case diagram for reservation of seat in railways. 10
2. (a) How can the three models of Object Oriented System be combined? List the mapping between these models. 5
- (b) Draw Object diagrams in which each of the following conventional data structures is replaced by one or more associations : 10
- (i) Array
- (ii) Structure
3. (a) What is meant by Scenario ? Create scenario for ATM transaction. 5
- (b) Identify atleast 5 classes in a Library Information System. 10
4. (a) " Aggregation is a special form of transitive association". Do you agree with this statement ? Justify your answer. 5

- (b) Draw a Data Flow Diagrams for computing the volume and surface area of a cylinder. Inputs are the height and radius of the cylinder. Outputs are volume and surface area. 10
5. Define the following terms, giving atleast one example of each : 15
- (a) Operator overloading
  - (b) Friend classes
  - (c) Friend functions
  - (d) Abstract classes
  - (e) Virtual Base Class
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