

(Please write your Exam. Roll. No.)

Exam. Roll. No.

# END TERM EXAMINATION

FIFTH SEMESTER(MCA),DECEMBER-2010

Paper Code:MCA-301

Subject: Object Oriented Software Engineering

Paper ID:44301

Time:3 Hours

Note: Attempt all questions. Internal choice is given

## Q1: Attempt any ten questions

- i. Justify System Development as part of a large activity.
- ii. Draw the Object Model of the Software Life Cycle.
- iii. Discuss the Use Case as a basis for System Modeling.
- iv. What are the main disciplines of Unified approach.
- v. What are the activities of the Testing Process?
- vi. Discuss in short the Requirement Change Management Process.
- vii. How do you represent a class in CRC?
- viii. Define Homogenization with example.
- ix. Define different semantics of a Stimulus.
- x. Differentiate Aggregation vs. Composition with example.
- xi. Differentiate Sequence Diagrams vs. Collaboration Diagrams.
- xii. Discuss in short Component Diagram.

**(2X10=20)**

### UNIT-1

- Q2) (a) Discuss any three OOAD Methodologies, which preceded the formulation of the UML? **(6)**
- (b) In what way does the Object Oriented approach claim to improve the System Development Process? **(4)**

### OR

- Q3) (a) Consider a product to facilitate the Academic Work of an Institute conducting MCA Program. Write **three** verifiable requirement specifications for each functional and non-functional requirements for the same. **(6)**
- (b) Discuss the Object Oriented System Analysis and Design Life Cycle model. **(4)**

### UNIT-2

- Q4) (a) Define Architecture of a method. Discuss System Development is a model building. **(1+3)**
- (b) Identify at least **three** Usecases with brief description for each system. **(2X3)**  
The Usecase must demonstrate the main features of the system.
- (i) GGSIPU MCA Counseling System
- (ii) Payroll System

### OR

- Q5) (a) How extension association is used to structure and relate Usecase Description? Support with an example. **(2.5)**
- (b) Discuss the **three** different types of objects used to describe the system in Analysis Model. Consider a product to operate ATM machine, Identify at least two domain objects of each type of objects specifying Analysis Model. **(4.5+3)**

### UNIT-3

- Q6) (a) Compare Centralize vs. Decentralize structures of Interaction diagram with example. What are the principal rules for both the structures of Interaction Diagram? **(3+2)**
- (b) What unit test of Object Oriented code is more complex than testing Ordinary(Procedural) code? What are the different tests which can be done during System Test? **(3+2)**

### OR

- Q7) (a)What are the main reasons of having Construction Phase? What do we Include in the Implementation Environment. Discuss **(2+3)**
- (b) Discuss the principle of Automatic Testing. Why Interface Simulator Is required in Automatic Testing? **(3+2)**

### UNIT-4

Q8 Consider a Ticket Vending Machine System (TVMS).TVMS dispenses tickets to Passengers at a railway station . Passengers use the front panel to specify their Boarding and s place, details of passengers (number of adults and children) and date of travel. The passenger then deposits cash in the bin provided and presses 'accept cash'. The machine checks for cash, if it is more, the balance cash is paid out. And the ticket requested is printed. The system is also used by the operator who might want to know the cash held in the machine, the break up of small change available in the machine, withdraw or deposit cash when needed. And the report options also include the detailed report of transactions, summary report of the number of tickets sold for each destination, opening balance, cash collected, cash dispensed and the current balance in the machine.

- (a) Identify Actors and Usecase for the TVM System and represent them in Usecase diagram. Write the brief description of each Usecase. **(4)**
- (b) Describe the scenario of at least one Usecase and draw the Sequence diagram for the same. **(3)**
- (c) For implementing the TVM system identify the classes and their relationships and represent them in class diagram. **(3)**

**OR**

Q9 (a) A simple digital watch has a display and two buttons to set it, the A button And the B button. The watch has two modes of operation, display time and Set time. In the display time mode, the watch displays hours and minutes, separated by a flashing colon.

The set time mode has two submodes, set hours and set minutes. The A button selects modes. Each time it is presses, the mode advances in the sequences : display, set hours, set minutes, display, etc. Within the submodes, the B button advances the hours or minutes once each time it is pressed. Buttons must be released before they can generate another event. Prepare a state diagram of the watch. **(5)**

(b) For a scenario described below draw an Activity Diagram(specify the actors for each activity in swimlanes)

To add/purchase books in a library: The students request for a particular title. Librarian takes help of the inventory to find out if sufficient book copies are available. If not, the librarian consults a professor for approval of purchase of additional copies for that title. If approved the librarian orders the supplier for book copies. On arrival of the book copies the student and professor are notified. While books are being added, student can/may/will issue other books if needed. Inventory is updated on arrival of book copies and payment is issued against bill by the librarian. **(5)**