



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, Master of Computer Applications (MCA)

Semester End Examination; June - 2017

Object Oriented Modeling and Design Patterns

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. List and explain the themes that are well supported in object-oriented technology. 10
- b. Explain the following object oriented concepts with an example in UML notations : 10
- i) Link and Association ii) Aggregation iii) Association class.
- 2 a. How does a model serve in several purposes? Explain. 10
- b. Discuss class model and design a College class model with atleast five class diagrams and include the UML symbols, notations such as end names, multiplicity. 10

UNIT - II

- 3 a. Describe state modeling. Using UML notations, design the state model for telephone line and include all the possible nested states. 10
- b. Explain the concept of aggregation concurrency and design the state model of a car as an aggregation of part states: Ignition, Transmission, Accelerator and Brake. 10
- 4 a. Explain the following : 10
- i) Single generalization ii) Synchronization of concurrent activities.
- b. Design a sample state model using UML notations and illustrate about the relation of class and state models. 10

UNIT - III

- 5 a. Elaborate about the sequence of well-defined stages involved in the software development, each with a distinct purpose. 10
- b. Draw the figure with details which shows the overview of analysis with a problem statement generated during the system connection. Compare between domain analysis and application analysis. 10
- 6 a. Design ATM class model with right attributes, include the significant association names, qualifiers and multiplicity values. 10
- b. Draw the use case diagram for ATM system and present the details about the initial and final events for each use case. 10

UNIT - IV

- 7 a. Narrate different libraries and its role in the system design. 10
- b. Explain the following concepts involved in the system design process : 10
- i) Open and Closed architecture ii) Partitions iii) Allocation of subsystems.
- 8 a. Compare and contrast between the following in choosing a software control strategy : 10
- i) Procedure-driven control ii) Event driven control
- iii) Concurrent control iv) Internal control.
- b. How class design is different from system design? Write the steps involved in the class design. 10

UNIT - V

- 9 a. Illustrate the significance of a pattern. Classify the patterns and brief about the three-part schema underlies every pattern. 10
- b. Explain command processor design pattern with an example and outline the responsibilities of each class involved in this design pattern. 10
- 10 a. Discuss view handler design pattern with neat example and design the class model which shows the structure of view handler pattern. 10
- b. Design the UML class model which shows the static relationships in the Forwarder-Receiver design pattern which uses IPC (Inter Process Communication) and also design the sequence diagram which shows two peers p1 and p2 communicate with each other. 10

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