MCA/ M11
Object Oriented Methodology
Paper : MCA 404

Time: Three Hours **Maximum Marks: 80**

Note: Students will be required to attempt FIVE questions in all. Question No. 1 is compulsory. In addition to compulsory question, students will have to attempt Four more questions, selecting One question from each Unit.

1. Answer the following questions in brief:
   (h) Differentiate between << include>> and <<extend>> relationships.
   (ii) What is qualified association? Give at least two examples.
   (iii) What is object? What are four characteristics of object? Give one suitable example
   (iv) Distinguish between aggregation and composition by giving example
   (v) Explain concurrency within an object by giving a suitable example
   (vi) Explain the relationship between object model and dynamic model
   (vii) What are trade-off priorities in system design?
   (viii) How can you promote reusability?

UNIT-I

2. What is sequence diagram? Discuss rules to draw a sequence diagram. What is collaboration diagram? How is it different from sequence diagram? Draw a sequence diagram for a session with an online stockbroker. Also draw the collection diagram for the same

3. (a) What is activity diagram? Draw an activity diagram for an order processing system using the concept of swimlanes
   (b) What is component diagram? How do you model component's interfaces? Explain with examples.

UNIT-II

4. (a) What do you mean by typing? What are defferent types of programming languages based on typing? Explain each type in brief and give at least two examples in each of the category
   (b) What are constraints? Discuss different types of constraints used in object modeling with examples.

5. (a) What is object model? Explain different types of generalization relationship used in object model with examples

(b) Identify objects and their classes for classroom teaching system and draw the class diagram. Show multiplicity, role names aggregation, inheritance etc.

Unit-III

6. (a) What is dynamic model? Explain the following concepts associated with the dynamic model by giving examples: activity action, guard, event's attributes, event generalization and composite state.

(b) Draw a nested state diagram for automatic transmission of a car.

6. What is functional model? Gove three examples of systems where functional model is more prominent than other models. What are the steps to draw a DFD? Draw the context diagram of lemonade system and than draw level 1 and level 2 DFDs to identify subprodesses, data flows and data stores.

UNIT-IV

8. (a) Explain the following reusable things-libraries, frameworks and patterns.

(b) How do you estimate hardware resource requirements and allocate tasks to processors?

© Distinguish between internal and external software controls

9. (a) Discuss the guidelines to design algorithms.

(b) How do you combine object, dynamic and functional model during object design?