

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 214419

Roll No.

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MCA

(SEM. IV) THEORY EXAMINATION 2013-14

OBJECT ORIENTED SYSTEMS

Time : 3 Hours

Total Marks : 100

Note :—Attempt all questions.

1. Answer any **two** parts : **(10×2=20)**
 - (a) (i) Why do we use object diagrams ? What are the two types of object diagrams ?
 - (ii) What is metadata ? Explain concept of meta class with an example.
 - (b) A manufacturing company has factories and offices in many major cities of India. The employees working in the offices are categorised as Managers, Engineers and Clerks. Employees working in the factories are categorised as Supervisors and Machine Operators. The company wishes to develop a system for managing the details of its employees. Identify the classes in the system and draw a class diagram. Each class must have at least three attributes and two operations. Explain the classes and associations, if any.

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- (c) Prepare an object diagram for graphical document editor that support grouping, which is a concept used in a variety of graphical editors. Assume that a document is composed of several sheets. Each sheet contains drawing objects, including text, geometrical objects and groups. A group is simply a set of drawing object, possibly including other groups. A group must contain at least two drawing objects. A drawing object can be a direct member of at most one group. Geometrical object include circle, ellipse, rectangle, lines, and squares.

2. Answer any **two** parts : **(10×2=20)**

- (a) (i) What do you understand by Scenario in dynamic model ? Write the scenario for an ATM transaction.
- (ii) What do you mean by guarded condition ? Explain with suitable example.
- (b) A simple digital watch has a display and two buttons to set it, the A button and B button. The watch has two modes of operation, display time and set time. In the display time mode, hours and minutes are displayed, separated by a flashing colon. The set time mode has two sub-modes, set hours and set minutes. The A button is used to select modes, each time it is pressed, the mode advances in the sequence : display, set hours, set minutes, display, etc. Within the sub-modes, the B button is used to advance 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.

(c) (i) What is a State Diagram ? Explain one shot state diagram with example.

(ii) Discuss the concept of an event and event generalization.

3. Answer any **two** parts : **(10×2=20)**

(a) What is the purpose of using a functional model ? Give an example of functional model. Also explain the following terms in the context of data flow diagrams : Process, Data Flow, and Data Store.

(b) (i) Compare the OMT methodology with SA/SD methodology.

(ii) Write a short note on JSD methodology.

(c) Prepare a data flow diagram for computing the volume and surface area of cylinder. Inputs are the height and radius of the cylinder. Outputs are volume and surface area. Discuss several ways of implementing the data flow diagram.

4. Attempt any **two** parts : **(10×2=20)**

(a) (i) How does String class differ from String Buffer class in Java ? Explain with example.

(ii) What do you understand by Thread ? Explain the life cycle of a Thread.

(b) (i) Develop an applet that receives three numeric values as input from the user and then display the largest of the three on the screen. Write a HTML page and test the applet.

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(ii) Define Java Swing. Differentiate between Swing object and AWT object.

(c) Assume there is a table named student in MS-Access with fields (std_id, std_name, dob, marks). Write a code for servlet which will display all the fields of student table using JDBC.

5. Write short notes on any **two** of the following with suitable example : **(10×2=20)**

(a) Migrating from C++ to java

(b) Dynamic Billboard Applet

(c) Java Servlet.