Printed Pages : 7 **ECS-305**

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

PAPER ID : 0113 Roll No. | | | | | | | | | | |

B. Tech.

(Semester-III) Theory Examination, 2011-12

OBJECT ORIENTED SYSTEMS

Time : 3 Hours] *[Total Marks : 100*

Note : Attempt questions from all Sections as per directions.

Section-A

Attempt *all* parts. Each part carries 2 marks. 2×10=20

1. (a) What is object-oriented modelling ? When is objected-oriented modelling useful ?
   (b) What are subclasses and superclasses ? Give examples of each of these.
   (c) Name any five diagrams available in UML.
   (d) What is JVM and what is Byte code.
   (e) Write a program in JAVA to display the first 10 natural numbers and their sum.
   (f) What do you mean by Abstract classes and Abstract methods ?
   (g) Explain the use of try and catch in JAVA.

(h) What is the order of method invocation in an applet ?

(i) Define AWT and give name of any five AWT controls.

(j) Give any five differences between C++ and JAVA.

Section-B

Attempt *all* parts. Each carries 6 marks. 6×5=30

2. (a) Describe the class diagram in Fig. 1 with its various constraints, methods and attributes. Create a corresponding Instance diagram for the given class diagram.

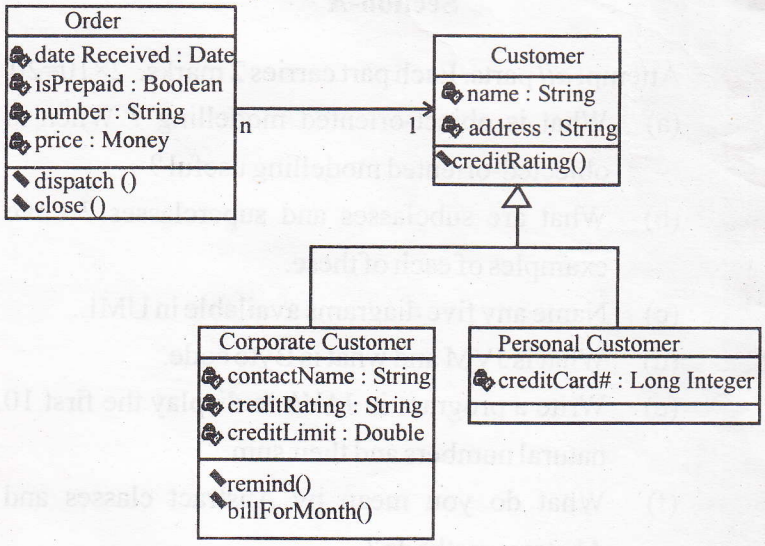

Fig. 1

(h) What is the order of method invocation in an applet ?

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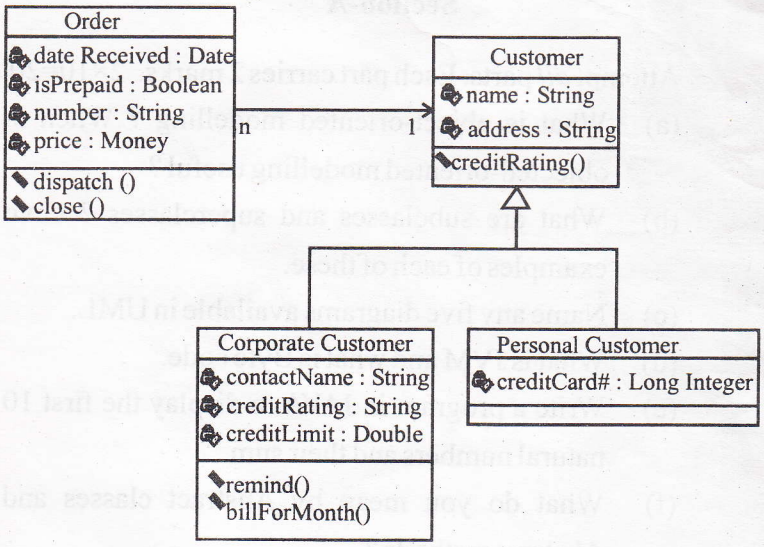

Fig. 1

(b) State clearly the various operations which govern the state diagram patterns for events and single objects.

(c) Explain and compare SA/SD and JSD (Jackson structured development) methodologies.

(d) Write a Java program for the operations respective to Gaussian integers. Guassian integers are observed as 'a+ib', where a and b are integers and 'i' denotes imaginary part of the Gaussian number. Operations are to be implemented using a switch case with the default conditions.

(e) Explain the procedure of JDBC connectivity in Java with Windows database. A data of 200 students having following fields in records is to be imported in Java.

Record structure :

Roll Number : Integer
Name : Character array of 150
Address : Character array of 200
Marks : Integer

Grade : Single character having values from 'A' 'B' 'C' 'D' or 'E'. Write a Java program to import these records from Windows and send them to Output Text File.

Section-C

Attempt *all* questions.

3. Attempt any *one* part. Each part carries 10 marks : 10×5=50

(a) Given Fig. 2 shows a portion of Metamodel which describes generalization. A generalization is associated with various generalization roles, which are the roles that object classes play in generalization relationships. Role type is either subclass or superclass. Does this model support multiple inheritance ? Explain your answer.

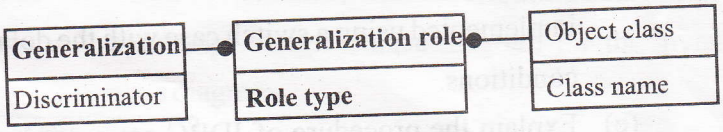

Fig. 2

(b) What is a functional dependency ? Explain with suitable examples. From a "functional" point of view, there may be many different "applications" in an "enterprise". How do you integrate them ?

4. Attempt any *one* part. Each carries 10 marks :

(a) A simple digital watch has a display and two buttons to set it, the button A and button B. The watch has two modes of operation, display time and set time. In the display time mode, hours and

minutes are displayed, separated by 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 button B 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 state diagram for watch.

(b) Explain with the required diagram the synchronization of concurrent activities with the emphasis over splitting control and merging control.

5. Attempt any one part. Each carries 10 marks :

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

(b) Describe OMT methodology as a sequence of operations and draw a flow chart of it.

6. Attempt any *one* part. Each part carries 10 marks :

(a) Explain the life cyclic of thread with its priorities. Explain multithreading in the lieu of following terms :

(i) Thread Synchronization

(ii) Inter-thread Communication

(iii) Thread Deadlock

(iv) Thread Control : Suspend Stop and Resume. Give a code snipped that demonstrates multithreading.

(b) Give the Java code with the function performing each of the following operations for I/O :

(i) Constructing a File Name path.

(ii) Getting the Size of a File.

(iii) Count lines of a particular file.

(iv) Renaming a File or Directory.

(v) Copying a File to another File.

7. Attempt any *one* part. Each carries 10 marks :

(a) What are JavaBeans ? How does it provide compound document capability to Java applications ? Does a simple button is a Bean ? If yes, explain how. If not, explain why not.

(b) Explain the features and various artifacts of Dynamic Billboard Applet.