2015

OBJECT ORIENTED ANALYSIS AND DESIGN

Paper : CS 511

Full Marks : 100

Time : Three hours

***The figures in the margin indicate
full marks for the questions.***

Answer ***any five*** questions

1. *(a)* What are the demerits of procedure oriented programming? Explain the following object-oriented programming concepts :
    data encapsulation, inheritance, polymorphism.   3+9=12

    (b) What is UML? State the goals of UML.   5+3=8

2. *(a)* Write a program in C++ to add two complex numbers overloading the unary plus operator.   7

(b) Write a program in C++ to show how constructor overloading can be implemented. 6

(c) Write a program in C++ to show how inheritance is used to achieve class hierarchy. 7

3. (a) What do you mean by SDLC? Explain the importance of each of the phases of any SDLC model (except waterfall model) 2+10=12

(b) What do you mean by association in a class diagram? What are its types? Differentiate them with suitable examples. 2+6=8

4. (a) Given the following problem statement:
"Customer places orders with a supplier. The order is for various number of different kinds of parts. An order consists of a number of order lines; each line specifies a particular item from the supplier's catalogue and says the quantity to be ordered. Customer can make payments in three different ways : credit card, cash or cheque."

Identify suitable classes and draw the class diagram for the above problem statement. 8

(b) What is use case modeling? Differentiate between the following in use case diagrams : 2+6=8

    (i) uses and extends

    (ii) actor and user

(c) What do you mean by common coupling and control coupling ? 4

5. *(a)* What is the importance of statechart diagram ? What do you mean by the terms action, event and guard ? Describe with suitable examples.

                    3+9=12

(b) "An Android app has to be developed so that the students of CIT can reserve and renew library books using their phones. This app will also facilitate students to check availability of books. The librarian will use this app to update book records and manage other library related works. The system admin will be able to add and remove students and faculty members whenever required. An auxiliary system will be responsible for backing up the information every night." Design use-case diagram for the system. 8

6. (a) What is the need of 'Swimlanes' in activity diagram ? Construct activity diagram with swimlanes for ATM system. 2+8=10

(b) Explain collaboration diagram with a suitable example. How messages are numbered to represent their sequence in collaboration diagrams. 6+4=10

7. Write short notes on the followings : (any two) 2×10=20

(i) UML Sequence diagram

(ii) Virtual function in C++

(iii) UML object diagram

(iv) UML Deployment diagram.