TCS – 605

B. Tech.

(SEM. VI) EXAMINATION, 2007-08

OBJECT ORIENTED SYSTEMS AND C++

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

Note :   (i)   *Attempt all questions.*

        (ii)   *All questions carry equal marks.*

1   Attempt any **four** of the following :   5×4=20

     (a)   Differentiate object and class with examples.

     (b)   Give example of many to many association and link.

     (c)   Explain generalization and inheritance.

     (d)   Describe aggregation with suitable example.

     (e)   Discuss the problems associated with multiple inheritance.

     (f)   What is the use of metadata ? Explain it with its application area.

2   Attempt any **four** among following :   5×4=20

   (a)   Write scenarios for the following activities : Getting
         ready to take a trip in your car.

   (b)   What will happen if concurrent activities are not
         synchronized ?

   (c)   Draw the nested - state diagram with generalization
         of car transmission.

   (d)   Explore the relation of object and dynamic models.

   (e)   Draw state diagram for a phone call.

   (f)   Explain event and state.

3   Attempt any **four** of the followings :   5×4=20

   (a)   Draw the data flow diagram for student information
         system.

   (b)   Design functional model for flight simulator ?

   (c)   Specify the operations in the above mentioned
         problem (3. a).

   (d)   Prepare a data flow diagram for computing the
         volume and surface area of a cylinder. Inputs are
         the height and radius of the cylinder. Outputs are
         volume and surface area.

   (e)   Describe the various phases of OMT methodology.

   (f)   What are the advantages of OMT methodology over
         traditional software development approach ?

4   Attempt any **two** parts of the following :   10×2=20

(a)   (i)   Create a class object - 'time' that has separate 'int' member data for hours, minutes and seconds. One constructor should initialize this data to zero and another should initialize it to fixed values. A member function should display it, in 11:59:59 format.

The final member function should add two object of 'time' passed as arguments.

(ii) Modify the 'time' class in question [on 4(a)(i)] so that instead of a function 'add-time ( )' it uses the overloaded + operator to add two times. Write a programme to test this class.

(b)   Create a class 'publication' that stores the title (a string) and price (type float) of a publication. From this class derive two classes : 'book' which adds a page count (type int); and 'tape', which adds a playing time in minutes (type float). Each of these three classes should have a 'getdata ( )' function to get its data from the user at the keyboard, and a 'put data ( )' function to display its data. Write a 'main ( )' program to test the 'book' and 'tape' classes by creating instances of them, asking the user to fill in their data with 'getdata ( )', and then displaying the data with 'put data ( ) ?

(c) Write a program that emulates the COPY command. That is, it should copy the contents of a character file to another file. Invoke the program with two command - line arguments - the source file and the destination file like this :

C>COPY srcfile.ext, destfile.ext

Your program should incorporate validations.

5 Attempt any **four** of the followings : **5×4=20**

(a) What is i-node ? What it's each field signifies ?

(b) Compare shell programming with high level language like 'C'.

(c) Write and explain in brief any five command related to system administration under UNIX environment.

(d) Write steps to create a file using vi editor.

(e) What is meant by file permission and how is it modified ?

(f) What is mounting ? How a drive is mounted in the existing file system through command ?