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

PAPER ID : 110403 Roll No. | | | | | | | | | | |

**B.Tech.**

(SEM. IV) THEORY EXAMINATION 2013-14

**OBJECT ORIENTED PROGRAMMING WITH C++**

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

**Note :** Attempt questions from all Sections as per instructions.

**SECTION–A**

1. Attempt **all** parts : **(10×2=20)**

   (a) How does a main () function in C++ differ from main() in C ?

   (b) What is the use of scope resolution operator ?

   (c) What is the purpose of using a derived class ?

   (d) What is Polymorphism ?

   (e) What do you understand by Data Abstraction ?

   (f) Write the name of the function in C++ used for opening a file for input only.

   (g) What is the use of friend function in C++ ?

   (h) What is the purpose of constructors in C++ ?

   (i) What do understand by dynamic modelling ?

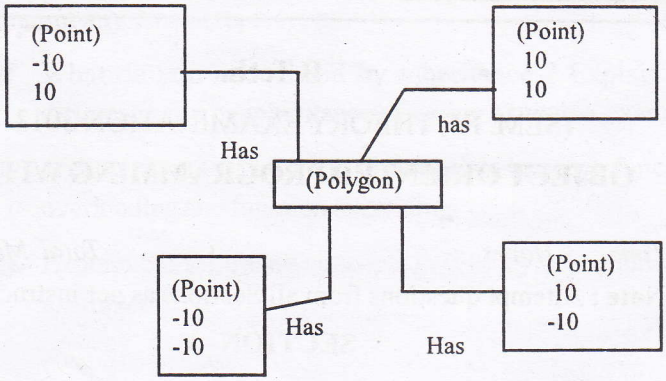
   (j) What is a Candidate Key ?

**SECTION–B**

2. Attempt any **three** parts : **(10×3=30)**

   (a) Explain different Object Modelling Technique (OMT)

models ? Prepare a class diagram from the instance diagram. Explain your multiplicity decision. Each point has a X-coordinate and Y-coordinate. What is the smallest number of points required to construct a polygon ?




(b) Differentiate between Object Oriented Programming and Procedural Programming ? Write a program in C++ by creating a class of integers and write a function that prints all the Prime numbers from the class.

(c) What is the purpose of levels in DFD ? Explain by drawing a DFD for the automation of Library in your college. Draw upto 3 levels of DFD.

(d) Write a program in C++ to add, multiply, divide and subtract two complex numbers using the concept of operator overloading.

(e) A File contains a list of telephone numbers in the following form :

| Name | Phone |
|---|---|
| Amit | 9213654291 |
| Laptop | 9659213008 |
| ..... | ..... |
| ..... | ..... |

The name contains only one word and the names and telephone numbers are separated by white spaces. Write a program in C++ to read the file and output the list in two columns as shown above.

## SECTION–C

Attempt **all** questions. **(5×10=50)**

3. Attempt any **two** parts :

   (a) What is the difference between link and association ? Draw an object diagram to explain.

   (b) Explain pattern and metadata with suitable example ?

   (c) Define the term multiplicity and quantification with suitable examples.

4. Attempt any **two** parts :

   (a) Differentiate between the following :

      (i) Aggregation and Association

      (ii) Generalization and Specialization.

   (b) What are Nested State diagrams ? Why are they useful ? Explain with suitable examples.

   (c) Describe events and states. How is a state diagram prepared ? Explain by suitable examples.

5. Attempt any **two** parts :

   (a) Define UML. Draw a UML diagram for the automation of training and placement office of any college. Make suitable assumptions if required and explain them clearly.

   (b) What is Exceptions. Explain with suitable examples.

(c) Explain the following for functional modelling :

(i) Data store

(ii) Context diagram.

6. Attempt any **two** parts :

(a) What do you understand by inheritance ? Explain the different types of inheritance by taking a suitable example.

(b) Write a program in C++ to differentiate between function overloading and function overriding.

(c) Explain the following concepts in C++ by taking suitable example :

(i) String class

(ii) Arrays of Objects

7. Attempt any **two** parts :

(a) How File handling is done in C++. Explain by taking a suitable example.

(b) Write a program in C++ using class and objects. Take array of objects and explain how it can be used.

(c) Write short notes on the following :

(i) C++ streams

(ii) Class Templates.