# BACHELOR IN COMPUTER APPLICATIONS (BCA) Term-End Practical Examination 

December, 2011
CS-72P : C++ AND OBJECT ORIENTED PROGRAMMING
Time allowed : 2 hours
Maximum Marks : 100
(Weightage : 15\%)

## General Instructions :

(i) There are two compulsory questions in this paper of 40 marks each. Rest 20 marks are for viva - voce.
(ii) You must write appropriate main ( ) function and test your program.
(iii) Write/print the programs, input and results on your answer-script.
(iv) Make and state suitable assumptions, if any.

1. Design and implement a class point 3D that represents a point in 3D as $(x, y, z)$. The class has a constructor ; and a friend function which calculates the difference between two points.

Assume
distance between two points $\left(x_{1}, y_{1}, z_{1}\right)$ and $\left(x_{2}, y_{2}, z_{2}\right)$ is calculated as

$$
\sqrt{\left(x_{2}-x_{1}\right)^{2}+\left(y_{2}-y_{1}\right)^{2}+\left(z_{2}-z_{1}\right)^{2}}
$$

2. Consider the following hierarchy along with suggested data members of classes :


Full time
Part time

- Hostel Name - Contact Phone

Design and implement the classes in the hierarchy using $\mathrm{C}++$. You may add more data members in the classes, if needed. You may include at least one constructor in each class. Also implement a function print_info ( ) that prints the details of the related object. You should demonstrate polymorphism using the print_info ( ) and appropriate main ( ).

