

B.Sc. DEGREE (C.B.C.S.S.) EXAMINATION, OCTOBER 2015**Third Semester**

Vocational Subject—Computer Science

OBJECT ORIENTED PROGRAMMING WITH C++

(For B.Sc. Mathematics Model II)

(2013 Admission onwards)

Time : Three Hours

Maximum : 80 Marks

Part A*Answer all questions. Each question carries 1 mark.*

1. What is data encapsulation ?
2. In procedure-oriented programming, all data are shared by all functions. Write True or False.
3. What do you mean by dynamic binding ?
4. Friend functions have access to only public members of a class. Write True or False.
5. A function can return a value by reference. Write True or False.
6. What is operator overloading ?
7. What is a virtual base class ?
8. What does 'This' pointer point to ?
9. The ios::ate mode allows us to write data anywhere in the file. Write True or False.
10. Write the syntax for defining an object of a template class.

(10 × 1 = 10)

Part B*Answer any eight questions from this part. Each question carries 2 marks.*

11. What kinds of things can become objects in oop ?
12. Describe inheritance as applied to oop.
13. How does object oriented approach differ from object based approach.
14. When will you make a function inline. Why ?
15. When do we declare a member of a class static ?
16. When is a friend function compulsory ? Give an example.

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17. When do we use the 'protected' visibility specifier to a class member.
18. Class D is derived from class B. The class D does not contain any data members of its own. Does the class D require constructors ? If yes, why ?
19. Why do we need virtual functions ?
20. What are the advantages of saving data in binary form ?
21. Find the errors in the following statement :-
`ifstream.infile ("DATA");`
22. Write the general format of a function template.

(8 × 2 = 16)

Part C

Answer any six questions. Each question carries 4 marks.

23. Describe how data are shared by functions in a procedure-oriented programme.
24. How are data and functions organized in an object oriented programme.
25. Comment on the following function definitions :
 - (a) `int* f ()`
`{`
`int m = 1 ;`
`...`
`return (& m);`
 - (b) `double f ()`
`{`
`...`
`...`
`return (1);`
26. Describe the mechanism of accessing data members and member functions in the following cases :-
 - (a) Inside a member function of the same class.
 - (b) Inside a member function of another class.
27. A friend function cannot be used to overload the assignment operator = . Explain, why ?
28. What are the different forms of inheritance. Given an example for each.
29. What are the applications of 'this' pointer ?

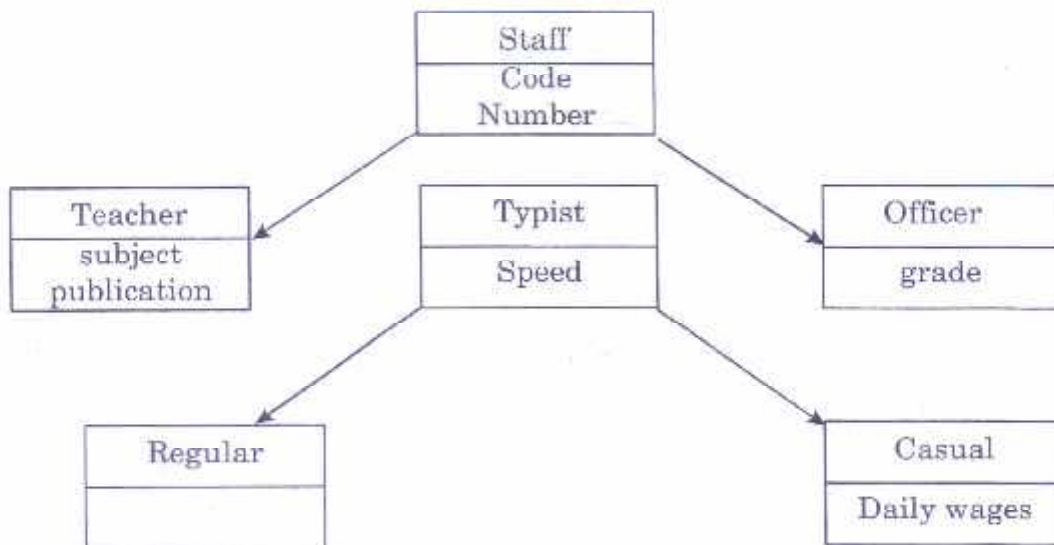
30. What is exception handling and how is it implemented in C++ Elaborate it with the help of an example.
31. What is the difference between opening of a file with a constructor function and opening a file with open () function. When is one method preferred over the other ?

(6 × 4 = 24)

Part D

Answer any **two** questions. Each question carries 15 marks.

32. (a) List a few areas of applications of OOP technology.
 (b) Discuss an approach to the development of procedure-oriented programming.
33. (a) Write a function to read a matrix of size $m \times n$ from the keyboard.
 (b) Write a macro that obtains the largest of three numbers.
34. An educational institution wishes to maintain a database of its employees. The database is divided into a number of classes whose hierarchical relationships are given in figure below. The figure also shows the minimum information required for each class. Specify all the classes and define functions to create the database and retrieve individual information as and when required.



Turn over

35. A file contains a list of telephone numbers in the following form :

John	23456
Ahmed	9876

.....

.....

The names contain only one word and the names and telephone numbers are separated with white spaces. Write a program to read the file and output the list in two columns.

(2 × 15 = 30 marks)