B.A/B.Sc. 3rd Semester (Honours) Examination, 2019 (CBCS)

Subject : Mathematics

Paper : BMH3SEC13

(Object Oriented Programming in C++)

Time: 2 Hours **Full Marks: 40**

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Notation and Symbols have their usual meaning.

Group-A

1. Answer *any five* questions from the following: 2×5=10

(a) Point out two differences between C and C++ languages.

(b) Differentiate between 'pointer' and 'reference'.

(c) What do you mean by 'scope of a variable'?

(d) What is abstraction?

(e) Can a local variable and a global variable both have same identifier? Give reason in support of your answer.

(f) What is 'inline function'?

(g) What is compiler? Why it is used?

(h) Write two salient features of Object Oriented Programming?

Group-B

2. Answer *any two* questions from the following: 5×2=10

(a) Write a program in C++ to find HCF (GCD) of two numbers. What is recursion? 3+2=5

(b) Write a function in C++ to swap two variables without using any third variable. Who invented C++? In which year it was invented? 3+2=5

(c) Write a function in C++ to find factorial of a given number. What is void pointer? 3+2=5

(d) Write a program in C++ to check whether a given string is palindrome or not. What is exception? 3+2=5

Group-C

10×2=20

3. Answer *any two* questions from the following:

(a) (i) Write a program in C++ to create a copy constructor for "complex" class. [A complex object has one real part and one imaginary part].

(ii) Differentiate between 'call-by-value' and 'call-by-reference'.

(iii) How do you initialize constant data members? 6+2+2=10

(b) (i) Write a program in C++ to overload '+' operator for complex object. If z1 and z2 are two complex objects, then all of the following operations should be performed:

- z 1 + z 2
- z1 + 2·5
- 3·9 + z1

(ii) What is an exit controlled loop?

(iii) Differentiate between copy construction and assignment operation. 6+2+2=10

(c) (i) Explain different types of inheritance with examples.

(ii) What is "protected" access specifier?

(iii) What is "this" pointer? 6+2+2=10

(d) (i) Explain exception handling mechanism in C++ using try-catch blocks. Give suitable examples.

(ii) What do you mean by ellipses (...) in catch block of exception handling?

(iii) Differentiate between 'while loop' and 'do-while loop'. 6+2+2=10
