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**S.E. (Information Technology) (I Semester) EXAMINATION, 2017**  
**PROBLEM SOLVING AND OBJECT ORIENTED PROGRAMMING**  
**CONCEPTS**

**(2015 PATTERN)**

**Time : 2 Hours**

**Maximum Marks : 50**

**N.B. :—** (i) Answer Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4,  
Q. No. 5 or Q. No. 6, Q. No. 7 or Q. No. 8.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Assume suitable data, if necessary.

1. (a) What are the six steps of problem solving ? [6]  
(b) State the major differences in the three types of loop structures.

[6]

*Or*

2. (a) When should you use single decision logic over nested decision logic ? [6]

- (b) What are the relationships of the problem-solving tools to each other ? [6]

P.T.O.

3. (a) Write an algorithm to find the maximum in an array and the position : [4]  
(i) where it first occurs  
(ii) where it last occur.
- (b) Write a C++ program to calculate the area of circle, rectangle and triangle using function overloading. [4]
- (c) Write algorithm for keyword searching. [4]

*Or*

4. (a) Write a C++ program to overload unary operator minus(-). [4]
- (b) Explain the syntax of operator overloading using friend function. [4]
- (c) What do you mean by dynamic initialization of object ? [4]
5. (a) What is static data member and static member function? Write its properties. [6]
- (b) Explain constructors and destructors in inheritance. [4]
- (c) Write a program to demonstrate how constructor and destructor are invoked in multilevel inheritance. [3]

*Or*

6. (a) Differentiate between Procedural Oriented Programming and Object-oriented Programming. [6]
- (b) Explain early binding and late binding. [4]
- (c) What is inheritance ? Write types of inheritance. [3]

7. (a) Explain Standard Template Library (STL). [6]
- (b) Write a C++ program to swap two numbers using concept of function template. [4]
- (c) How to catch multiple exceptions ? [3]

*Or*

8. (a) Write a note on RTTI. [6]
- (b) What is exception handling mechanism in C++ ? Write a program in C++ to handle "divide by zero" exception. [4]
- (c) How to Manage console I/O operations ? [3]