ES203
[ET]

Enrol. No. 077

END SEMESTER EXAMINATION : NOV.-DEC., 2016

# OBJECT ORIENTED PROGRAMMING USING C++

*Time : 3 Hrs.* *Maximum Mars : 70*

**Note:** ***Attempt questions from all sections as directed.***

## SECTION – A (30 Marks)

*Attempt any* **five** *questions out of* **six.**
*Each question carries* **06** *marks.*

1. Explain dynamic memory management ? Write a C++ program demonstrating the usage of new and delete operators for a single variable as well as for an array.

2. State the important features of object oriented programming. Compare the object oriented system, with procedure oriented system.

3. (a) What happens if we have the following two functions ?

```
int Area(int width, int length =1);

int Area(int size);
```

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Will these overload ? There are a different number of parameters but the first one has a default value. (4)

(b) How memory is allocated to an object ? State with the help of an example. (2)

4. Define Constructor. Explain various types of constructors with examples.

5. (a) What is exception handling ? What is the sequence of events when an exception occurs ? (3)

(b) Write a program to find factorial of a number by using class object and function. (3)

6. What is inline function ? When will you make a function inline ? How does an inline function differ from a preprocessor macro ?

## SECTION – B (20 Marks)

*Attempt any* **two** *questions out of* **three.**
*Each question carries* **10** *marks.*

7. Create two objects of class STRING s1 and s2 as shown below :

STRING s1="Amity"

STRING s2="University"

Implement the following operations and write the output of each operation :

Copy the content of s1 to s3.

Find the substring "Univ" in s2.

Compare s1 and s2.

8. What is runtime polymorphism ? How virtual functions can be used to implement the runtime polymorphism ? Explain with the help of example.

9. (a) What is Class Templates ? Write C++ program to swap two numbers using function template. (6)

(b) What is a friend function ? Explain the need for using a friend function. (4)

## SECTION – C (20 Marks)

*(Compulsory)*

10. (a) Write a C++ program to create a base class called STUDENT(Name, Roll Number, Age) and using inheritance create classes JG student and PG student having fields as semester, fees and stiphend. Enter the data of 6 students. Find the average age, semester wise for all UG and PG students separately. (Assume at least two different values for semester field for each of UG and PG classes). (12)

(b) What are pure virtual functions in C++ ? Explain with the help of a program. Also explain the rules of virtual functions ? (8)