**RAJARATA UNIVERSITY OF SRI LANKA**
**FACULTY OF APPLIED SCIENCES**

**B.Sc. (General) Degree in Applied Sciences**
**First Year - Semester II Examination – November /December 2016**

**COM 1305 – OBJECT ORIENTED PROGRAMMING**
**(Theory Paper)**

**Time: Two (02) hours**

**Answer all questions.**

1.

a. Distinguish between structured programming vs. unstructured programming. Briefly explain two (02) structured programming paradigms. (06 marks)

b. **"Reusability and maintainability can be easily achieved with Object Oriented Programming".** Do you agree with this statement? Justify your answer with respect to other programming paradigms. (08 marks)

c. Object and Class are the building blocks of Object Oriented Programming. Explain with examples how they differ from each other. (06 marks)

d. Explain how mutators and assessors are assisted in handling member variables of a class. (05 marks)

(Total: 25 marks)

2.

a. **"Hiding internal state and requiring all interaction to be performed through an object`s methods is known as data encapsulation".** Discuss with a suitable example. (05 marks)

b. Explain the two (02) ways how you can obtain polymorphism in Object Oriented programming. (06 marks)

c. Create a class called 'account'. The account is described using an account number, current_balance, owner name and the address. If the owner withdraws or deposits money, current balance of the account is updated respectively. By identifying the relevant attributes and the behaviors of the accounts, implement a complete class for the account. Other than the methods you have identified on depositing and withdrawing, there should also be a constructor to initialize the class variables and a get method to get the current_balance as well. Finally create an account for the person Nimal who is living in Anuradhapura, having the account number of 1127865 with the current balance of Rs. 100, 000/=. Further perform 2 of the operations he had done on last week which are deposit of 20,000/= and 10, 000/= withdrawal. (10 marks)

d. What is generalization and specialization with respect to inheritance? Explain with an example. (04 marks)

(Total: 25 marks)

3.

a. Constructor is a special method in a class. Briefly explain how it is special other than the other methods in a class. (05 marks)

b. Differentiate between normal variable and static variable with an example. (06 marks)

c. Strength of public access modifier is greater than the protected access modifier. Discuss by emphasizing the accessibility limitations of each modifiers. (08 marks)

d. Explain what the advantages of arranging classes in to packages are. (06 marks)

(Total: 25 marks)

4.

a. Abstract class is considered as incomplete class (not a concrete class) and cannot be instantiated. Explain the reasons. (06 marks)

b. What do you mean by an interface in Object Oriented programming? Explain how it differs from a class. (06 marks)

c. **"The Java does not permit multiple inheritances, but with Java interfaces,this statement can't be applied".**Do you agree with this statement? Discuss. (08 marks)

d. Consider the following java program with 2 classes.

```
class A  {
                public void methodX(int a, String b) {
                        System.out.println("A");}}
class Overriding2 extends A{
                public void methodX(int a, String b)  {
                        System.out.println("B");}

                public static void main(String args[]) {
                        A x = new Overriding2();
                        x.methodX(10,"ABC");}}
```

State what will be the output of this code? Explain the main reason for it with respect to the dynamic and static bindings. (05 marks)

(Total: 25 marks)

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