**Mohammad Ali Jinnah University**

**Faculty of Computing**

**Department of Computer Science Program: BS(CS) / BS(SE)**

**Midterm Examinations – Fall 2020**

**CS1420 – Object Oriented Programming – AM/BM/CM/DM/EM**

**Teacher’s Name: Mr. Munim Ali Khan & Ms. Asma Yousif Total Marks: 50**

**Date: November 16th, 2020 Time: 1.5 Hours**

**Instructions:**

**Read the instructions carefully before starting the exam:**

1. Questions will not be interpreted. Instructor will only confirm or deny errors in the question.
2. Return this paper along with the answer-booklet.
3. Understanding the question is part of exam. In case of any ambiguity, you may make assumptions. But your assumption must not contradict any statement in the paper.
4. Switch off your cell phones and put them away.
5. **There are TOTAL (09) questions and question paper consists of (03) pages.**

# SECTION A (15 marks)

**QUESTION 01:** Differentiate the following: (06 marks)

1. Class and Object
2. Instance and Static Variable
3. Getter/Setter and Constructor

**QUESTION 02:** Briefly discuss the importance of Encapsulation. List down the access modifiers.

(03 marks)

**QUESTION 03:** What advantages does OOP have over Procedural Programming? (02 marks)

**QUESTION 04:** Can **this()** be called from anywhere in the constructor? Justify your answer.



(02 marks)



**QUESTION 05:** “A public class that has private fields and package private methods is not visible to classes outside the package.” Is this statement correct or not? Justify your answer. (02 marks)

# SECTION B (35 marks)

**QUESTION 06:** Read the given code and decide what would be the output of the following scenarios? (05 marks)

class Course

{

String courseType;

String courseName;

String courseSection;

Course() { }

Course(String type, String name, String section)

{

courseType = type; courseName = name; courseSection = section;

}

void courseDisplayInfo()

{

System.out.println(courseName + “\n” + courseSection + “\n” + courseType);

} }

**Scenario 1:**

Course new\_course; new\_course.courseDisplayInfo();

**Scenario 2:**

Course course = new Course(); course.courseDisplayInfo();

**Scenario 3:**

Course oop = new Course(“Core”, “OOP”, “ZM”);

oop.courseDisplayInfo();

**QUESTION 07:** For the class given below, any object cannot have numTeeth less than 0 and weight less than 5kg, do we have any control on it? Design a solution for it. (05 marks)

package animal;

public class Dog { int numTeeth; int weight; }

**QUESTION 08:** Consider a student registration program used by the registrar’s office. The program keeps track of students who are registered for a given semester. For each student registered, the program maintains the student’s name, address, and phone number; the number of courses in which the student is enrolled; and the student’s total credit hours. The program also keeps track of the total number of registered students. Define instance and class variables of a Student class that is suitable for this program. (05 marks)

**QUESTION 09:** An Employee has a first name and a last name as his personal attributes. There are Engineer and Manager which are treated as two different categories of Employees. Both engineer and manager are salaried persons. Manager gets his monthly salary which is Rs. 80,000 whereas Engineer gets his salary after getting the product of how many hours he worked and per hour wage. You are required to make a program in which you need to print the employee data using ALL the concepts of OOP you have studied so far in your classes. You may make methods as per you see fit. (20 marks)

\*\*\*\* END OF PAPER \*\*\*\*