**JEREMIAH NYAGAH NATIONAL POLYTECHNIC**

**DEPARTMENT OF COMPUTING & INFORMATICS**

**ICT LEVEL 6**

**PRACTICAL CAT 2**

**DEVELOP COMPUTER PROGRAM (JAVA PROGRAMMING)**

**TIME: 2 HOURS  TOTAL MARKS: 50 MARKS**

**INSTRUCTIONS TO CANDIDATE:**

* *You are required to complete the two practical quizzes below using Java.*
* *Use an IDE such as NetBeans, Eclipse, IntelliJ IDEA, or VS Code.*
* *Save your Java files with meaningful names in a folder named CAT2\_YourName on the desktop.*
* *Ensure your program compiles and runs successfully without errors.*
* *Comment your code properly to explain logic and function purpose.*

**TASK 1: Student Management System (25 Marks)**

**Scenario:**

Develop a console-based Java program that manages student records for a college department.

**Requirements:**

1. Create a class named **Student** with the following attributes:

* name (String)
* regNo (String)
* marks (double)

1. Implement the following methods:

* **calculateGrade()** — determines grade based on marks using the rules below:

|  |  |
| --- | --- |
| **Marks Range** | **Grade** |
| 80 - 100 | A |
| 70 - 79 | B |
| 60 - 69 | C |
| 50 - 59 | D |
| Below 50 | Fail |

1. In your **main()** method:

* Accept user input for at least **3 students.**
* Display all **student details** with their **computed grades.**

1. Apply **classes, objects,** and **methods** appropriately.
2. Save your file as *StudentManagement.java.*

**TASK 2: Employee Payroll System (25 Marks)**

**Scenario:**  
Write a Java program that computes employee salaries using class and inheritance concepts.

**Requirements:**

1. Create a parent class named **Employee** with attributes:

* name (String)
* id (String)
* basicSalary (double)

1. Create a subclass **Payroll** that inherits from **Employee** and adds:

* Methods to calculate:
* NHIF = 2% of basic salary
* NSSF = 5% of basic salary
* Net Salary = Basic Salary – (NHIF + NSSF)

1. In your **main()** method:

* Create an object of class **Payroll.**
* Accept employee **name, ID,** and **basic salary** from the user.
* Display all details including **NHIF, NSSF,** and **Net Salary**.

1. Use proper **variable naming, access modifiers**, and **inheritance** principles.
2. Save the file as *EmployeePayroll.java.*