031306T4PSY

OBJECT ORIENTED PROGRAMMING LEVEL 6

PSY/OS/CO/CR/10/6

July/August 2025

AMREF INTERNATIONAL TRAINING CENTER

CANDIDATE WRITTEN ASSESSMENT

Time: 3 HOURS

INSTRUCTIONS TO CANDIDATE

1. Marks for each question are indicated in the brackets.
2. The paper consists of **TWO** sections: **A** and **B**.
3. Candidates are provided with a separate answer booklet
4. **DO NOT** write on this question paper.

This paper consists of TWO (2) printed pages

Candidates should check the question paper to ascertain that all pages are printed as indicated and that no questions are missing.

SECTION A (40 MARKS)

Answer ALL the questions in this section.

1. Software company X wants to develop cross-platform healthcare applications. Outline FOUR (4) applications where Java can be used in modern software development. (4 Marks)
2. A programmer is choosing Java for developing a patient management system. Mention FOUR (4) key features that make Java suitable for application development. (4 Marks)
3. John, a team lead needs to explain how Java programs run on different computers to his interns. Illustrate how the Java Virtual Machine (JVM) works to execute Java programs. (4 Marks)
4. You are a junior software developer learning java fundamental. State FOUR (4) rules for creating valid Java identifiers you will likely to use. (4 Marks)
5. A programmer is controlling access to class members in a hospital system. Identify FOUR (4) types of Java modifiers used in programming. (4 Marks)
6. Jane, a coding instructor is teaching variable types to students. Outline FOUR (4) primitive data types in Java with their memory sizes. (4 Marks)
7. A developer needs to perform calculations in a medical billing application. Name FOUR (4) categories of operators available in Java. (4 Marks)
8. Group of students are writing their first Java programs. Explain the purpose and basic structure of the main () method in Java that they must use. (4 Marks)
9. When developing java applications, software developers need to be aware of built in java names. State FOUR (4) Java keywords that cannot be used as variable names. (4 Marks)
10. Variables in java are key to storying data that the application will be using. Distinguish between local variables and instance variables in Java programming. (4 Marks)

SECTION B:(60 MARKS)

Answer Any Three Questions

11. A health clinic needs a simple BMI calculator program to help assess patient health status.
    a. Write a Java program that calculates Body Mass Index (BMI) using the formula: BMI = weight(kg) / (height(m))². The program should accept weight and height as input and display the BMI result. (10 Marks)

b. Extend the program to include BMI categories by adding if-else statements that display whether the patient is underweight (BMI < 18.5), normal weight (18.5-24.9), overweight (25-29.9), or obese (BMI ≥ 30). (10 Marks)

12. Medical facility wants to process daily patient visit data shown in table 1.

Day	**No of patient**
Mon	100
Tue	30
Wed	45
Thur	89
Fri	50

Use loops and arrays to perform the following:

a. Write a Java program using a for loop that displays the number of patients seen each day for a week. (10 Marks)

b. Use while loop to calculate and display the total number of patients and average patients per day from the stored array data. (10 Marks)

13. A pharmacy system needs to manage medicine inventory with simple decision-making capabilities.

a. Create a Java program that uses if-else statements to check medicine stock levels. If stock is below 10, display "Low Stock Alert", if between 10-50 display "Normal Stock", and above 50 display "High Stock". (10 Marks)

b. Write a program using switch statement that displays different medicine categories (1-Antibiotics, 2-Painkillers, 3-Vitamins, 4-Others) based on user input numbers 1-4. (10 Marks)

14. Records department wants to track patient ages for statistical analysis.

a. Write a Java program that creates an array to store ages of 5 patients, accepts input for each age, and displays all ages using a for-each loop. (10 Marks)

b. Extend the program to find and display the youngest and oldest patient ages from the array using appropriate loop structures. (10 Marks)