

## C++ Vacation Calculation Program - Question and Marking Scheme

Question (10 Marks Total)

(C++) Vacation Calculation Program

Given the following C++ code snippet intended to determine the number of weeks of vacation based on the number of years an employee has worked, answer the following:

```
#include <iostream>

using namespace std;

int main()
{
    double years;

    int Vacation;

    cout << "Enter the years: ";

    cin >> years;

    if (years == 0)
        Vacation = 0;

    else if (1 <= years && 5 <= years)
        Vacation = 1;

    else if (years >= 11)
        Vacation = 3;

    cout << "Weeks of vacation: " << Vacation << endl;
```

```

return 0;

}

```

- Identify and correct the syntax and logical errors in the program. (6 marks)
- What is the expected output if the user inputs 12? (2 marks)
- Suggest a missing condition to make the vacation calculation more complete. (2 marks)

### Answer Scheme

- Error Identification and Correction (6 marks)

Error Identified	Correction	Marks
-----	-----	-----
`int. Vacation;` is invalid syntax	Change to `int Vacation;`	1
Missing semicolon after `Vacation = 0`	Add `;` after `Vacation = 0`	1
Logical error in `else if (1 <= years && 5 <= years)`	Change to `else if (years >= 1 && years <= 5)`	2
No condition for years between 6 and 10	Mention the missing range	1
Incorrect variable casing `vacation` vs `Vacation`	Change `vacation` to `Vacation`	1

- Expected Output if input = 12 (2 marks)

Condition matched: `years >= 11`, so:

Output: Weeks of vacation: 3

- 1 mark for correct reasoning
- 1 mark for correct output

c) Suggested Missing Condition (2 marks)

Suggest handling the case for `years >= 6 && years <= 10`:

```
else if (years >= 6 && years <= 10)
```

```
    Vacation = 2;
```

- 1 mark for logical condition
- 1 mark for assigning appropriate vacation weeks (e.g., 2 weeks)