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Daffodil International University

Faculty of Science & Information Technology
Department of Software Engineering
Midterm Examination - Summer 2025
Course Code: SE 121; Course Title: Structured Programming
Sections & Teachers: All (MAK, ZNM, MR, JIC, SCS, AHZ, KFH, AF)

Time: 1.5 Hours **Marks: 25**

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1. a) **Interpret** the output of the program and **explain** the change of values in each steps. **[Marks-4]** **CLO-1 Level-2**

```
#include <stdio.h>
int main() {
        int a=10, b=5,c,d;
        c = a++;
        d = --b;
        b = --c;
        printf("%d\n", a);
        printf("%d\n", b);
        printf("%d\n", c);
        printf("%d\n", d);
        return 0;
    }
```

b) **Rewrite** both programs in a correct and compilable form. **[Marks-6]** **CLO-1 Level-2**

i)

```
#include<stdio.h>
Include <math.h>
int main { }(
DOUBLE X;
X = 8.5;
Y = pow(x);
printf("%f %f\n ",X,Y);
return 0;
)
```

ii)

```
#include <stdio.h>
#define PI 3.14
int main(){
int length=10, width = = 5;
float area;
area = length x width;
printf("The area of rectangle
is: %c\n", area);
return 0;
}
```

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2.	a)	Suppose you are a passionate developer and you have told to design a simple restaurant recommendation system that suggests dishes based on the time of day as follows: • If the time is between 6 AM and 11 AM - Recommendation is "Pancakes and Coffee" • If the time is between 12 PM and 3 PM - Recommendation is "Chicken Salad" • If the time is between 4 PM and 6 PM - Recommendation is "Samosa and Chai" • If the time is between 7 PM and 10 PM - Recommendation is "Grilled Steak" **Solve** this logic by writing a program using the C programming language.	**[Marks-4]**	**CLO-2** *Level-3*
	b)	Suppose you are tasked to **construct** a C program that uses a switch-case to calculate the area of a shape based on user choice: *1* = Circle, 2 = Square, 3 = Rectangle. The program should input the required dimensions and display the area. Handle invalid choices properly.	**[Marks-6]**	**CLO-2** *Level-3*
	c)	You're helping a friend build a quirky mobile app called "Number Mirror" that shows how numbers would look if they were reflected in a magical mirror. As the backend developer, your task is to write a program that takes any positive integer as input and reverses its digits using only a loop. This reversed version is what the mirror would display. **Construct** a C program for the logic of the app.	**[Marks-5]**	**CLO2** *Level-3*

Sample Input	**Sample Output**
Enter Choice: 1 Enter Radius: 4	Area of Circle: 50.265
Enter Choice: 2 Enter One Side: 4	Area of Square: 16
Enter Choice: 3 Enter Length: 4 Enter Width: 3	Area of Rectangle: 12

Sample Input:	**Sample Output:**
Enter a number: *7081*	Mirror image: 1807