



**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)	<p>Interpret the output of the program and explain the change of values in each steps.</p> <pre>#include &lt;stdio.h&gt; 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; }</pre>	[Marks-4]	CLO-1 Level-2		
	b)	<p>Rewrite both programs in a correct and compilable form.</p> <table><tr><td>i) #include&lt;stdio.h&gt; Include &lt;math.h&gt; int main { }( DOUBLE X; X = 8.5; Y = pow(x); printf(“%f %f\n”,X,Y); return 0; )</td><td>ii) #include &lt;stdio.h&gt; #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; }</td></tr></table>	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; }	[Marks-6]	CLO-1 Level-2
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2.	<p>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:</p> <ul style="list-style-type: none"><li>• If the time is between 6 AM and 11 AM - Recommendation is "Pancakes and Coffee"</li><li>• If the time is between 12 PM and 3 PM - Recommendation is "Chicken Salad"</li><li>• If the time is between 4 PM and 6 PM - Recommendation is "Samosa and Chai"</li><li>• If the time is between 7 PM and 10 PM - Recommendation is "Grilled Steak"</li></ul> <p>Solve this logic by writing a program using the C programming language.</p>	[Marks-4]	CLO-2 Level-3								
	<p>b) Suppose you are tasked to <b>construct</b> a C program that uses a switch-case to calculate the area of a shape based on user choice:</p> <p>1 = Circle, 2 = Square, 3 = Rectangle.</p> <p>The program should input the required dimensions and display the area. Handle invalid choices properly.</p> <table><tr><th>Sample Input</th><th>Sample Output</th></tr><tr><td>Enter Choice: 1 Enter Radius: 4</td><td>Area of Circle: 50.265</td></tr><tr><td>Enter Choice: 2 Enter One Side: 4</td><td>Area of Square: 16</td></tr><tr><td>Enter Choice: 3 Enter Length: 4 Enter Width: 3</td><td>Area of Rectangle: 12</td></tr></table>	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	[Marks-6]	CLO-2 Level-3
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	<p>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.</p> <p><b>Construct a C program for the logic of the app.</b></p> <table><tr><th>Sample Input:</th><th>Sample Output:</th></tr><tr><td>Enter a number: 7081</td><td>Mirror image: 1807</td></tr></table>	Sample Input:	Sample Output:	Enter a number: 7081	Mirror image: 1807	[Marks-5]	CLO2 Level-3				
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