



**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.]*

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|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------|
| 1.                                                                                                                                                  | <p>a) 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<br>Level-2                                                                                                                                                                                     |           |                  |
|                                                                                                                                                     | <p>b) Rewrite both programs in a correct and compilable form.</p> <table border="1"><tr><td><p>i)</p><pre>#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; )</pre></td><td><p>ii)</p><pre>#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; }</pre></td></tr></table> | <p>i)</p> <pre>#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; )</pre> | <p>ii)</p> <pre>#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; }</pre> | [Marks-6] | CLO-1<br>Level-2 |
| <p>i)</p> <pre>#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; )</pre> | <p>ii)</p> <pre>#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; }</pre>                                                                                                                                                                                                                                                                         |                                                                                                                                                     |                                                                                                                                                                                                      |           |                  |

| 2.                                                   | <p>a)</p> <p>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<br>Level-3 |                                    |                        |                                      |                    |                                                      |                       |           |                  |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|------------------------------------|------------------------|--------------------------------------|--------------------|------------------------------------------------------|-----------------------|-----------|------------------|
|                                                      | <p>b)</p> <p>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<br/>Enter Radius: 4</td><td>Area of Circle: 50.265</td></tr><tr><td>Enter Choice: 2<br/>Enter One Side: 4</td><td>Area of Square: 16</td></tr><tr><td>Enter Choice: 3<br/>Enter Length: 4<br/>Enter Width: 3</td><td>Area of Rectangle: 12</td></tr></table>   | Sample Input  | Sample Output    | Enter Choice: 1<br>Enter Radius: 4 | Area of Circle: 50.265 | Enter Choice: 2<br>Enter One Side: 4 | Area of Square: 16 | Enter Choice: 3<br>Enter Length: 4<br>Enter Width: 3 | Area of Rectangle: 12 | [Marks-6] | CLO-2<br>Level-3 |
| Sample Input                                         | Sample Output                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |               |                  |                                    |                        |                                      |                    |                                                      |                       |           |                  |
| Enter Choice: 1<br>Enter Radius: 4                   | Area of Circle: 50.265                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |               |                  |                                    |                        |                                      |                    |                                                      |                       |           |                  |
| Enter Choice: 2<br>Enter One Side: 4                 | Area of Square: 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                  |                                    |                        |                                      |                    |                                                      |                       |           |                  |
| Enter Choice: 3<br>Enter Length: 4<br>Enter Width: 3 | Area of Rectangle: 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |                  |                                    |                        |                                      |                    |                                                      |                       |           |                  |
|                                                      | <p>c)</p> <p>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<br>Level-3    |                                                      |                       |           |                  |
| Sample Input:                                        | Sample Output:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |                  |                                    |                        |                                      |                    |                                                      |                       |           |                  |
| Enter a number: 7081                                 | Mirror image: 1807                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |                  |                                    |                        |                                      |                    |                                                      |                       |           |                  |