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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.]***

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| **1.** | ***a)*** | **Interpret** the output of the program and **explain** the change of values in each steps.<br><br>`#include <stdio.h>`<br>`int main() {`<br>`int a=10, b=5,c,d;`<br>`c = a++;`<br>`d = --b;`<br>`b = --c;`<br>`printf("%d\n", a);`<br>`printf("%d\n", b);`<br>`printf("%d\n", c);`<br>`printf("%d\n", d);`<br>`return 0;`<br>`}` | **[Marks-4]** | **CLO-1** *Level-2* |
| | ***b)*** | **Rewrite** both programs in a correct and compilable form.<br><br>i)<br>`#include<stdio.h>`<br>`Include <math.h>`<br>`int main { }(`<br>`DOUBLE X;`<br>`X = 8.5;`<br>`Y = pow(x);`<br>`printf("%f %f\n ",X,Y);`<br>`return 0;`<br>`)`<br><br>ii)<br>`#include <stdio.h>`<br>`#define PI 3.14`<br>`int main(){`<br>`int length=10, width = = 5;`<br>`float area;`<br>`area = length x width;`<br>`printf("The area of rectangle is: %c\n", area);`<br>`return 0;`<br>`}` | **[Marks-6]** | **CLO-1** *Level-2* |

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#include

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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:<br>• If the time is between 6 AM and 11 AM - Recommendation is "Pancakes and Coffee"<br>• If the time is between 12 PM and 3 PM - Recommendation is "Chicken Salad"<br>• If the time is between 4 PM and 6 PM - Recommendation is "Samosa and Chai"<br>• If the time is between 7 PM and 10 PM - Recommendation is "Grilled Steak"<br><br>**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:<br>1 = Circle, 2 = Square, 3 = Rectangle.<br>The program should input the required dimensions and display the area. Handle invalid choices properly.<br><br>**Sample Input** / **Sample Output**<br>Enter Choice: 1<br>Enter Radius: 4 → Area of Circle: 50.265<br>Enter Choice: 2<br>Enter One Side: 4 → Area of Square: 16<br>Enter Choice: 3<br>Enter Length: 4<br>Enter Width: 3 → Area of Rectangle: 12 | **[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.<br>**Construct** a C program for the logic of the app.<br><br>**Sample Input:** Enter a number: 7081<br>**Sample Output:** Mirror image: 1807 | **[Marks-5]** | **CLO2** ***Level-3*** |