

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2022**

**PROBLEM SOLVING AND PROGRAMMING**

[Maximum Marks: 75]

[Time: 3 Hours]

**(PART-A)**

**I. (Answer *all* the following questions in one word or one sentence)**

**(9 x 1 = 9 Marks)**

		Module Outcome	Cognitive level
1.	State whether the following statement is <b>True</b> or <b>False</b> <b>reg no</b> is a valid identifier in C.	M1.03	U
2.	Write the C statement to read a value to an integer variable <b>num</b> .	M1.03	U
3.	State whether the following statement is <b>True</b> or <b>False</b> . An exit-controlled loop executes at least once.	M2.04	U
4.	_____ statement is used to terminate the execution of a loop.	M2.07	R
5.	The _____ statement is used to transfer control to a specified label.	M2.01	R
6.	A _____ return type means nothing is returned to the caller function?	M3.01	R
7.	State whether the following statement is <b>True</b> or <b>False</b> . A C function can return only one value.	M3.01	U
8.	Write the statement to declare an array named <b>num</b> to store 15 floating point values	M4.01	U
9.	Define an array.	M4.01	R

**(PART-B)**

**II. (Answer any *eight* questions from the following)**

**(8 x 3 = 24 Marks)**

		Module Outcome	Cognitive level
1.	Write short note on primary data types in C language.	M1.03	R
2.	Draw the flow chart to find the factorial of a given number.	M1.01	U
3.	Write the syntax of <b>if..else</b> statement. Give an example for <b>if...else</b> statement.	M2.01	U
4.	Write short note on continue statement.	M2.07	R
5.	Write a program to read two integers and find whether the first number is perfectly divisible by the second number.	M2.03	A
6.	Write a program to display the sum of all even numbers from 1 to 100.	M2.05	U
7.	Differentiate between formal parameters and actual parameters.	M3.02	U

8.	Write a user-defined function to calculate the area of a rectangle. Reading input data and displaying the result should be done in main() [hint: Area of the rectangle = length x breadth]	M3.03	A
9.	Write a C program to read <b>n</b> numbers into an array and display it.	M4.02	U
10.	Write a C program segment that declares a two-dimensional array <b>numbers</b> with 3 rows and 5 columns and inputs 15 numbers into this array from the user.	M4.03	U

**(PART-C)**

**III.(Answer all questions. Each question carries seven marks)**

**(6 x 7 = 42 Marks)**

		Module Outcome	Cognitive level										
1.	a) Differentiate between pre-increment and post-increment operators in C with examples. (4 Marks)	M1.03	U										
	b) Write a program to convert a temperature given in Fahrenheit to Degree Celsius. $C = \frac{(F-32) \times 5}{9}$ (3 Marks)	M1.04	U										
<b>OR</b>													
2.	a) Write a program to find the number of hours, minutes and seconds, if the user input the time is in seconds. [hint : For example, if the user enters 3800, then the output will be Hours = 1, Minutes = 3 and Seconds = 20] (4 Marks)	M1.04	U										
	b) Write the rules for creating variable names. (3 Marks)	M1.03	R										
3.	Explain the <b>switch</b> statement with example. (7 Marks)	M2.01	U										
<b>OR</b>													
4.	Write a program to check whether a given number is Armstrong number or not. [hint : Armstrong number is a number that is equal to the sum of cubes of its digits.] (7 Marks)	M2.05	A										
5.	Explain different looping statements with examples. (7 Marks)	M2.04	U										
<b>OR</b>													
6.	Write a program to read the unit consumed and calculate the electricity bill used on the following information. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th align="left">Unit consumed</th> <th align="left">Rate</th> </tr> </thead> <tbody> <tr> <td>0-150</td> <td>Rs.3 per unit.</td> </tr> <tr> <td>151-350</td> <td>Rs.450+ Rs.3.75 per unit above 150 unit.</td> </tr> <tr> <td>351-450</td> <td>Rs.1200+ Rs.4 per unit above 350 unit.</td> </tr> <tr> <td>Above 450</td> <td>Rs.1600+ Rs.5 per unit above 450 unit.</td> </tr> </tbody> </table> (7 Marks)	Unit consumed	Rate	0-150	Rs.3 per unit.	151-350	Rs.450+ Rs.3.75 per unit above 150 unit.	351-450	Rs.1200+ Rs.4 per unit above 350 unit.	Above 450	Rs.1600+ Rs.5 per unit above 450 unit.	M2.03	A
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7.	Write a program to read the values of three sides of a triangle and display its area. Use a user-defined function to calculate the area.  $\text{Area} = \sqrt{s(s - a)(s - b)(s - c)}$ Where, $s = \frac{(a+b+c)}{2}$ (7 Marks)  <b>OR</b>	M3.03	A
8.	Explain the Function declaration, Function call and Function definition with examples. (7 Marks)	M3.01	U
9.	Write a program to sort an integer array in ascending order. (7 Marks)  <b>OR</b>	M4.02	A
10.	Write a program to count the number of even numbers and odd numbers in a single dimensional array. (7 Marks)	M4.02	A
11.	Write a program to find the largest number in a given matrix. (7 Marks)  <b>OR</b>	M4.04	A
12.	Write a program find the sum of main diagonal elements of a square matrix. (7 Marks)	M4.04	A

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