

SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING  
AND TECHNOLOGY

(Common to CM / CC / CF / CN / CT / IF)

**PROBLEM SOLVING AND PROGRAMMING**  
**MODEL QUESTION PAPER**

Time: 3 hours

Maximum Marks: 75

**PART A**

**I. Answer all questions in one word or one sentence. Each question carries one mark.**

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

1	The ----- function is used to display output on the screen	M 1.03	R
2	Let x and y are two integer variables and y = 10. What is the value of x after executing the statement x = y++;	M 1.03	U
3	Write syntax of do – while loop	M 2.04	R
4	-----statement in C is used to exit from the current loop	M 2.07	R
5	&& is a -----operator	M 2.02	R
6	By default, ----- is the return type of C function	M 3.01	R
7	Normally a function can return a single value at a time( state True/False)	M 3.01	U
8	Define array.	M 4.01	R
9	The statement A[] = {{1,2,3}, {4,5,6}} will declare an array of size -----	M 4.03	U

**PART B**

**II. Answer any eight questions from the following. Each question carries 3 marks**

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

1	<p>Area of a triangle is given by the formula</p> $A = \sqrt{S(S-a)(S-b)(S-c)}$ <p>where a, b and c are the sides of the triangle  <math display="block">S = \frac{a+b+c}{2}</math> </p> <p>Draw a Flow chart to find the area of triangle for given values.</p>	M 1.01	A
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2	Describe about precedence and associativity of operators with example	M 1.03	U
3	Write the syntax of if – else ladder. Also give an example	M 2.03	R
4	Let <b>no = 10</b> , write the output of the following program segment. <pre> int first = 0; int second=1; int next,i; for(i=0; i&lt;no; i++){ printf(“%d\t”,first); next = first + second; first = second; second = next; } </pre>	M 2.04	U
5	The following code segment is expected find the sum of first n natural numbers. Identify the error in the program segment. <pre> int i = 0, sum ; while (i&gt;n) {sum = sum+i; } </pre>	M 2.04	U
6	Rewrite the following code using while loop <pre> for (i=0;i&lt;n;i++) printf(“%d”,i); </pre>	M 2.04	U
7	Explain any 3 built in functions with example	M 3.01	R
8	Differentiate between a function prototype, function definition and a function call.	M 3.01	U
9	Explain the declaration, initialization of a two dimensional array	M 4.04	R
10	In the array declaration double score[5]; state the following: a) The array name b) The range of values that an index for this array can have	M 4.01	U

### PART C

**Answer all questions. Each question carries seven marks**

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

III	a) Describe the steps in compiling and executing a C program 3 Marks	M 1.02	R
	b) Given 2 integer variables Draw a flowchart to interchange the values of these variables without using a third variable. Eg: Suppose initially a=10 and b=20 output a=20 and b=10 4 Marks	M 1.01	A

	<b>OR</b>		
IV	a) Explain different arithmetic and relational operators in C 3 Marks	M 1.03	R
	b) Write a program to convert Fahrenheit temperature into degree Celsius ( $c=(f-32)*5/9$ ) 4 Marks	M 1.04	A
V	a) Distinguish between do-while and while looping statements in C with the help of examples 3 Marks	M 2.04	R
	b) Write a program to find quadrant of a point (x,y). For eg;(2,-3) in fourth quadrant 4 Marks	M 2.03	A
	<b>OR</b>		
VI	a) Write the syntax of for loop statement. Give an example 3 Marks	M 2.04	U
	b) Write a program to find the roots of a quadratic equation $ax^2+bx+c=0$ based on the determinant 4 Marks	M 2.03	A
VII	Write a program to check the given number is prime or not	M 2.05	A
	<b>OR</b>		
VIII	Write a program to find the sum of odd numbers and even numbers from a given set of numbers	M 2.05	A
IX	a) Explain function declaration , function call and function definition with the help of an example 3 Marks	M 3.01	U
	b) Write a function to find the largest from two numbers and use this function to find largest number among four numbers 4 Marks	M 3.03	A
	<b>OR</b>		
X	a) Explain the procedure for passing arguments in function 3 Marks	M 3.02	R
	b) Develop a function to find the factorial of a number. Using this function write program to find ${}^nC_r = \frac{n!}{r!(n-r)!}$ 4 Marks	M 3.03	A
XI	The algorithm to convert decimal to binary is given below. Write a C program for the same.  i. Read the number ii. Store the remainder when the number is divided by 2 in an	M 4.02	A

	array. iii. Divide the number by 2 iv. Repeat the above two steps until the number is greater than zero.  Print the array in reverse order now.		
	<b>OR</b>		
XII	Write a program to find the largest elements in an array.	M 4.02	A
XIII	Write a program to do the following  a) Read order of a matrix b) Read elements of that matrix c) Print the elements in matrix form d) Print the sum of elements of the matrix.	M 4.04	A
	<b>OR</b>		
XIV	Write a program to do the following  a) Read an M by N matrix b) Check this matrix is a square matrix c) If above matrix is symmetric ,find the sum of diagonal elements	M 4.04	A