



# P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

I / II Semester, B.E. - Semester End Examination; Sep. / Oct. - 2023

## Problem Solving Through C

(Common to All Branches)

Time: 3 hrs

Max. Marks: 100

### Course Outcomes

The Students will be able to:

CO1: Compose step by step procedure /flow diagram to solve a given problem.

CO2: Identify the right data types based on the requirements of the problem.

CO3: Apply suitable programming constructs of C language and/or suitable data structures to solve the given problem.

CO4: Analyse and Identify the errors in given code snippet and determine the output.

CO5: Design and develop solutions to problems using structured or modular programming concept.

**Note:** I) PART - A is compulsory. Two marks for each question.

II) PART - B: Answer any **Two** sub questions (from a, b, c) for a Maximum of **18 marks** from each unit.

Q. No.	Questions	Marks	BLs	COs	POs
	<b>I : PART - A</b>	<b>10</b>			
1 a.	Write the symbols to be used to write a flowchart.	2	L2	CO1	PO1
b.	Write the output of the following code and justify the output; # include <stdio.h> void main() { int a = 6; if(a) printf ("Welcome"); else printf ("programming"); }	2	L1	CO2	PO1,2
c.	Analyze and write the output of the following code: # include <stdio.h> void main() { int a[10] = { 10, 20, 30, 40}; printf ("%d", a[6+1]); }	2	L3	CO2	PO2
d.	Analyze and write the output of the following code: # include <stdio.h> void main() { printf ("Computer"); print (); } void print () { if(0) printf ("Hello"); printf ("World"); }	2	L2	CO4	PO1,2,3

e. Analyze and write the output of the following code:

```
# include <stdio.h>
int main()
{
    int h = 102, *P;
    P = &h;
    h = h + h + 23;
    printf (“%d”,*P);
    printf (“%d”, h);
    return 0;
}
```

2 L3 CO2 PO2

**II : PART - B**

**90**

**UNIT - I**

**18**

2 a. Define flowchart. Write an algorithm and flowchart to find the smallest of three numbers.

9 L2 CO1 PO1

b. Explain the following with examples;

9 L1 CO1 PO1

i) Relational operators ii) Bitwise operators iii) Arithmetic operators

c. Evaluate the given expression and write the answers;

i)  $2*3 + (5*3/2)*22*2 + 8/2$

ii) int a = 2, b = 3;

int c, d, e;

c = a++ + ++b

d = --a + --a;

e = ++a + ++b;

printf (“%d %d %d”, c, d, e);

9 L3 CO2 PO2

**UNIT - II**

**18**

3 a. Develop a program to read day and display the day name using else-if statement.

9 L3 CO3 PO3

b. Explain the following with the syntax:

9 L1 CO1 PO1

i) printf( ) statement ii) if-else statement iii) for statement

c. Develop program to find the sum of the numbers for the following series:

9 L3 CO3 PO3

$1^2 + 2^2 + 3^2 + 4^2 + \dots + n^2$ .

**UNIT - III**

**18**

4 a. Define array. How to declare and initialize 1D array? Write the different ways of initializing 1D array with suitable examples.

9 L1 CO1 PO1

b. Develop a program to find the product of A x B matrix.

9 L3 CO3 PO3

c. Develop a program to read an array of ‘N’ integer numbers and search a key element in array using binary search technique.

9 L3 CO3 PO3

**UNIT - IV****18**

- 5 a. Develop a program to demonstrate the various categories of functions used in C language. 9 L3 CO3 PO3
- b. Define structure. Analyze the situation and write the code snippet. Let us create a structure called student having name, USN, semester, dob, branch, address as members of a structure student and initialize the structure members as follows:
- |                     |                     |   |            |
|---------------------|---------------------|---|------------|
| name = "Arun"       | name = "Ramu"       |   |            |
| USN = 4PS11CSXXX    | USN = 4PS12CSXXX    | 9 | L3 CO2 PO2 |
| semester = 2        | semester = 3        |   |            |
| dob = 13-13-2013    | dob = 13-12-2014    |   |            |
| branch = Electrical | branch = Automobile |   |            |
| address = Mandya    | address = Mandya    |   |            |
- And finally display the student details.
- c. Explain the following:
- Pass by value 9 L1 CO1 PO1
  - Pass by reference
  - List any six major differences between structure and union

**UNIT - V****18**

- 6 a. Develop a program to demonstrate;
- How to declare pointer variable?
  - How to initialize pointer variable? 9 L3 CO3 PO3
  - How to add two integer number using pointers?
  - How to read and display an array of 'N' integer numbers using pointers?
- b. Explain the following with syntax:
- Creation of new file
  - Reading from the file 9 L2 CO1 PO1
  - Writing to the file
  - Opening an existing file
- c. Develop a program to create a new file, add an array of 'N' integer numbers in to a file and find the sum of all the array elements and store the sum in an another file. Use appropriate file handling functions. 9 L3 CO3 PO3

\* \* \* \*