

**P.E.S. College of Engineering, Mandya - 571 401***(An Autonomous Institution affiliated to VTU, Belagavi)***First Semester, Master of Computer Applications (MCA)****Semester End Examination; April / May - 2021****Basics of Programming Language and Computer Organization**

Time: 3 hrs

Max. Marks: 100

Course Outcomes*The Students will be able to:**CO1: Develop flowchart and algorithms and apply the fundamental concepts and constructs of C to develop solutions for given problems.**CO2: Identify the suitable decision making statements and different looping statements and implement the problems with appropriate input and output functions and arrays.**CO3: Analyze different categories of function and develop programs on strings.**CO4: Create programs on structure and pointers.**CO5: Explain operational concepts of computers, Memory locations and addresses.***Note: I) Answer any FIVE full questions, selecting ONE full question from each unit.****II) Any THREE units will have internal choice and remaining TWO unit questions are compulsory.****III) Each unit carries 20 marks.**

Q. No.	Questions	Marks	BLs	COs	POs
UNIT - I					
1 a.	What is a flowchart? Draw the flowchart to find the roots of given equation.	6	L1	CO1	PO1
b.	Discuss different constants in 'C' with examples.	8	L3	CO1	PO2
c.	Evaluate the following expressions: $x = a - b/3 + c * 2 - 1$ $y = a - b/(3 + c) * (2 - 1)$ $z = a - (b/(3 + c) * 2) - 1$ where $a = 9, b = 12$ and $c = 3$	6	L3	CO1	PO1
UNIT - II					
2.a	Explain the concept of inputting integer number in the formatted input with an example (write a program).	6	L2	CO2	PO1
b.	Write a program to evaluate the power series and give its accuracy $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^2}{3!} + \dots + \frac{x^n}{n!}, 0 < x < 1$. Using while and if else construct only.	6	L4	CO2	PO1
c.	Write a program to calculate the roots of a quadratic equation $ax^2 + bx + c = 0$.	8	L4	CO2	PO2
UNIT - III					
3 a.	Write a program to copy one string into another and count the number of character copied.	6	L4	CO3	PO1
b.	Explain any five string handling functions of C with an example.	10	L2	CO3	PO1

- c. Write a program to print the alphabet set *a* to *z* and *A* to *Z* in decimal and character form. 4 L3 CO3 PO2

OR

- 3 d. Explain the different categories of function giving examples for each. 10 L2 CO4 PO1
- e. Write a program to calculate the standard deviation and mean for the set of array values reading from the terminal using functions 10 L3 CO4 PO1

$$\text{Standard Deviation} = \sqrt{\frac{1}{n} \sum_{i=1}^n (\bar{x} - x_i)^2} \quad \text{Where } \bar{x} \text{ is the mean?}$$

UNIT - IV

- 4 a. Differentiate between malloc and calloc with an example. 6 L2 CO4 PO1
- b. Explain pre-processor directives. 10 L2 CO4 PO2
- c. Explain any two file handling functions. 4 L2 CO4 PO1

OR

- 4 d. What is a pointer? Discuss with an example how to initialize a pointer variable? 8 L3 CO4 PO1
- e. Write any program to demonstrating a returning pointer function. 6 L3 CO4 PO1
- f. Explain the concept of getch and putc functions with an example. 6 L3 CO4 PO1

UNIT - V

- 5 a. Draw the functional units of computer and explain each block. 10 L3 CO4 PO1
- b. What is addressing modes? Discuss about different addressing modes. 10 L3 CO4 PO1

OR

- 5 c. Discuss the operational concepts of processor and the memory with figure. 10 L2 CO5 PO1
- d. Illustrate the working of subroutine linkage methods. 10 L2 CO5 PO1

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