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Code No. : 11425 N

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (E.C.E.) I-Semester Main Examinations, Jan./Feb.-2024

Programming and Problem Solving for Engineers

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO	PSO
1.	Convert the following numbers into its equivalent binary form: a) Hexadecimal Number: (A0C) ₁₆ b) Decimal Number: (2024) ₁₀	2	1	1	1	1
2.	Find the value of the variable 'a', that will be evaluated when we incorporate the below expression in a C program: <code>int a = -1 - 5 * 6 % 7 + 36 / 8 ;</code>	2	2	1	2	1
3.	Using the Conditional Operator (Ternary Operator), write a C statement to find the biggest of the given four floating point variables: 'a', 'b', 'c' and 'd'; and store the result in 'big'.	2	2	2	3	1
4.	Differentiate 'continue' and 'break' with an example in C.	2	2	2	1	1
5.	Write a C recursive function that returns the N th Fibonacci term, given the first and second terms are '1'.	2	2	3	3	1
6.	Show the Array contents in the intermediate steps when applying the 'bubble sort' with {40, 20, 10, 50, 30} as the initial dataset.	2	2	3	2	1
7.	Predict the output of the following code segment when embedded in a correct C program: <code>int A[5]={10,20,30,40,50}; int *p=&A[1]; printf("%d-%d-%d-",(*p)++,*p++,*p); printf("%d",*p);</code>	2	2	4	2	1
8.	Write a C function which must accept a string 'S', and returns the total number of uppercase characters in it? [string can have multiple words]	2	3	4	2	1
9.	Differentiate Structure and Union in a C program.	2	1	5	1	1
10.	Define an enumerated datatype by name <i>direction</i> , that maintains the four directions with the values: <i>east-1, west-3, north-4 and south-2</i> .	2	3	5	1	1
Part-B (5 × 8 = 40 Marks)						
11. a)	Define Compiler. With the help of a process flow diagram, explain the different stages of generating the hardware executable (.EXE) from an application (.C) written in C editor.	4	1	1	1	1
b)	Draw the flowchart for reading a natural number and checks if it is Palindrome or not.	4	2	1	2	1

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12. a)	Mention the different looping or iterative constructs that are supported in C? Write their syntax along with one example under each construct.	4	1	2	1	1
b)	Write a C program to print 'N' lines of Pascals Triangle.	4	3	2	3	1
13. a)	Develop a C program to read two matrices: [A] _{m x n} ; [B] _{p x q} of order m x n and p x q and perform matrix multiplication, displaying the result in the Matrix form.	4	2	3	3	1
b)	Write a C program to read 'N' data samples and using a function perform Selection Sort, printing the data before and after sorting in main application.	4	3	3	3	1
14. a)	Differentiate call-by-value and call-by-reference with valid example in C. Mention your inferences.	4	2	4	2	1
b)	How do you declare an Array at runtime? Write a C program to read an Array [A] of 'N' elements at runtime dynamically, and using a function perform Binary Search. (Assume that the data elements which are entered in the array are already in sorted ascending order)	4	3	4	3	1
15. a)	Define structure. Write a C program to declare a structure by name 'Student', having 'RollNumber' (3-digits), 'Name' and 'cgpa' as members. Allow the user to create 'N' records and print the Roll number and name of the student who secured highest CGPA. Use Linear Search algorithm.	4	3	5	2	1
b)	Write a C program to create a text file by name "Record.txt", allowing the user to enter the data until user enters '#' to stop. Later display the contents of the file.	4	3	5	2	1
16. a)	What are the bitwise operators (Boolean operators) which are supported in C. Give an example for each operator performing on C variables. Specify the precedence within these operators.	4	1	1	1	1
b)	Write a C program to read one character using non-formatted input function; and, using switch-case, display whether the entered character is lowercase or uppercase alphabet or a it is a digit or a special character.	4	2	2	2	1
17.	Answer any <i>two</i> of the following:					
a)	Discuss different storage classes that are supported in C. Mention the uses of these storage classes in developing the C programs?	4	2	3	1	1
b)	What is the concept of array of pointers? Mention any two cases where we use this concept. Write C statements to declare a 2D matrix [A] _{n x n} of order n x n at runtime, reading the data into it and displaying [A] in the matrix form.	4	3	4	2	1
c)	What is the importance of Command Line Arguments in C? Write the syntax of main to handle the arguments from the command prompt. Develop a C program to read 3 integers from command prompt and display the biggest.	4	3	5	3	1

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20.00%
ii)	Blooms Taxonomy Level – 2	40.00%
iii)	Blooms Taxonomy Level – 3 & 4	40.00%
