

MAKE UP EXAMINATIONS - JULY 2023

Program : B.E. - Common to all Programs
Course Name : Introduction to C Programming
Course Code : ESC135

Semester : I
Max. Marks : 100
Duration : 3 Hrs

Instructions to the Candidates:

- Answer one full question from each unit.

UNIT - I

- Explain the structure of a C program by considering a program to swap two numbers without using temporary variable. CO1 (08)
 - Define variable. List the rules of declaring a valid identifier. CO1 (06)
 - Evaluate the following expression using the precedence chart (where $x = 2.5$ $y = 0.0$ $a = 0$ $b = 1$ $c = -1$) CO1 (06)
 - $3*((4\%5)/2)$
 - $(0 < 1) \ \&\& \ (-1 < 1)$
 - $(x > y) + !a \ || \ c++$
 - $x * 5 \ \&\& \ 5 \ || \ (b / c)$
 - $-a * (5 + b) / 2 - c++ * b$
 - $(!a + !b) + 10 > > 2$
- Define the following with an example: CO1 (08)
 - System Software
 - Application software
 - Operating system
 - Compiler
 - Interpreter
 - Consider the below C program. CO1 (06)


```
#include <stdio.h>
#include <math.h>
#define PI 3.14159
int main()
{
    float radius, area;
    printf ("Enter the radius of a circle\n");
    scanf ("%f", &radius);
    area = PI*radius*radius;
    printf ("Area of the circle = %.2f\n", area);
    return 0;
}
```

Identify the following

 - Local Variable
 - Keyword
 - Pre-processor directive
 - Constant
 - Input and output functions

- c) Write a C program to convert degree Fahrenheit into degree Celsius and vice versa. CO1 (06)

UNIT - II

3. a) Write a C Program to check whether a given number is prime or not. CO2 (08)
b) Write a C program to find out the reverse of a given integer. CO2 (08)
c) With an example, discuss about the use of continue statement in C. CO2 (04)
4. a) Write a C program to find the roots of a quadratic equation using switch statement. CO2 (10)
b) Write a C program to check whether a given character is an alphabet, digit or a special character. CO2 (06)
c) With an example discuss the difference between while and do-while statements. CO2 (04)

UNIT - III

5. a) Explain call by value and call by reference in detail. CO3 (08)
b) Write a C program to calculate the factorial of a number recursively. CO3 (06)
c) Assume that there is an array Marks[], such that the index of the array specifies the roll number of the student and the value of a particular element denotes the marks obtained by the student. For example, if it is given Marks[4] = 78, then the student whose roll number is 4 has obtained 78 marks in the examination. Now, write an algorithm to:
i. Find the total number of students who have secured 80 or more marks.
ii. Print the roll number and marks of all the students who have got distinction.
6. a) Why are functions needed? Justify. CO3 (06)
b) How many types of storage classes does C support? List and explain any two in detail. CO3 (08)
c) How do you declare an array? Explain with example. CO3 (06)

UNIT- IV

7. a) Write a C program to find the sum of two matrices using functions. CO4 (06)
b) Write a C program to search for an element in a 1-D array using binary search. CO4 (08)
c) Mention the differences between character storage and string storage. CO4 (06)
8. a) Write a program to read 6 subject marks from the keyboard for a student. Generate a report that displays the marks from the highest to the lowest score attained by the student. [Read the marks into a 1-Dimensional array and sort using the bubble sort technique]. CO4 (10)
b) Define 2-D array. Explain how 2-D array can be initialized during run time compile time with examples. CO4 (06)
c) Explain the operation of scanf with an example. CO4 (04)

UNIT - V

9. a) Write a C program to read two strings, concatenating them without using string built-in functions. CO5 (08)
- b) Write a program to find the length of a string without using built-in functions. CO5 (06)
- c) Define pointer. List the advantages of using pointers. Discuss how to declare and initialize a pointer. CO5 (06)
10. a) Write the output of the code if a=[4 5 8 2 1] CO5 (04)
- ```
#include <stdio.h>
void main(){
 inti, n, sum = 0, inta[20];
 int *ptr;
 ptr = a;
 printf("Enter size of array : ");
 scanf("%d", &n);
 printf("Enter elements in the List\n ");
 for (i = 0; i < n; i++){
 scanf("%d", &a[i]);
 }
 //calculate sum of elements
 for (i = 0; i < n; i++){
 sum = sum + *(ptr + i);
 }
 printf("Sum of all elements in an array is = %d", sum);
}
```
- b) Write a program using built-in string function to CO5 (10)
- i) Convert "good morning" to "GOOD MORNING"
  - ii) Append the word "All" to the string "Good Morning".
- c) Write a C program using structures to read and display the information about an employee. CO5 (06)

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