

FACULTY OF ENGINEERING**B.E. (AICTE) II-Semester (Backlog) Examination, October 2021****Subject: Programming for Problem Solving****Time: 2 Hours****Max. Marks: 70****(Missing data, if any, may be suitably assumed)****PART – A****Note: Answer any five questions.****(5x2 = 10 Marks)**

- 1 What are syntax and logical errors? Give examples.
- 2 Convert the binary number into its equivalent octal and Hexadecimal number systems.
(a) 1010111100 (b) 001100101.110111
- 3 What is the output of following code

```
#include <stdio.h>
Void main()
{
    int a = 9, b = 9 ;
    a = b ++ ;
    b = a ++ ;
    b = ++ b ;
    printf(" % d %", a, b) ;
}
```
- 4 Where we use break statement in C language.
- 5 What are actual and formal arguments?
- 6 What is the purpose of main function in 'C'? Is it predefined or user defined?
- 7 Write the recursive functions (only represent) factorial and Fibonacci series.
- 8 What is a self-referential structure? Give example.
- 9 What is a pointer? With example show how it is defined and used.
- 10 What is a file? What are modes of operations performed on a file in 'C'?

PART – B**Note: Answer any four questions.****(4x15 = 60 Marks)**

- 11 (a) Write an algorithm to find maximum and minimum in the list of elements.
(b) Draw a flow chart to find factors of a given number.
- 12 (a) Explain any five pre-defined functions of strings with examples.
(b) Write a program to find no of even numbers and no of odd numbers in the list of ten elements.
- 13 (a) Write a program to search for an element using Binary search.
(b) Explain selection sort to sort elements in ascending order for the given elements : 15 4 10 7 9.
- 14 (a) Write a recursive program for factorial.
(b) Define a student structure with fields (name, age, gender, and marks in 5 subject).

Declare an array of student structure to hold 10 students information.
Write a function to access the array of student structure elements.

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- 15 (a) Write short notes on Files.
(b) Write a program to demonstrate base usage of pointers.
- 16 (a) Explain the difference between pointer to array and array of pointers with example.
(b) Write a program to find the given number is perfect or not using do... while loop.
- 17 (a) What are the advantages of files in C?
(b) Write a C program to find number of lines, words and characters in a given file.

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FACULTY OF ENGINEERING

B. E. II – Semester (AICTE) (Main) Examination, October 2021

Subject: Programming for problem solving

Time: 2 hours

Max. Marks: 70

- Note: i) First Question is compulsory and answer any three questions from the remaining six questions.**
ii) Answers to each question must be written at one place only and in the same order as they occur in the question paper.
iii) Missing data, if any may suitably be assumed.

Answer any four questions.

(4 x4= 16 Marks)

- 1 (a) Write the difference between object code and executable code?
(b) What does “extern” mean in a function declaration?
(c) Is null pointer same as uninitialized pointer.
(d) What is the difference between a constant and a variable?
(e) Write an algorithm for binary search.
(f) Discuss the scope of a variable with example.
(g) How to access structure elements? Give some examples.

(3x18=54 Marks)

- 2 (a) What are the components of the computer? Explain the functions of each component.
(b) Write a program to print all prime numbers less than 50.
- 3 (a) What are the different types of operators that are included in C. Give example for each.
(b) Write a C program to convert the binary equivalent of an integer number using array.
- 4 (a) Write a program to demonstrate call by value and call by reference.
(b) Explain different ways of passing arguments to function with example.
- 5 (a) Write a program to print mathematical table of a given number using recursion.
(b) How do you define a structure within a structure? Explain with an example.
- 6 (a) Explain the linked list with an example.
(b) Write a program to find the GCD of two numbers recursively.
- 7 (a) What is pointer variable? Give example? And what are the arithmetic operations that can be performed.
(b) Explain selection sort algorithm with suitable example.