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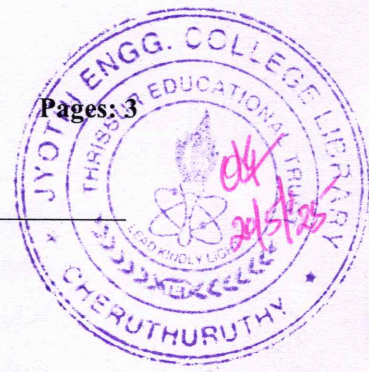
03GXEST204052501

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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY  
B.Tech Degree S2 (R) Examination May 2025 (2024 Scheme)



Course Code: GXEST204

Course Name: PROGRAMMING IN C

Max. Marks: 60

Duration: 2 hours 30 minutes

**PART A**

*(Answer all questions. Each question carries 3 marks)*

CO Marks

- 1 What will be the output of the following C program? Justify your answer. CO1 (3)

```
#include <stdio.h>
int main() {
    int a = 5; // binary: 0101
    int b = 9; // binary: 1001
    printf("%d", a & b);
    return 0;
}
```

- 2 Find out the errors, if any in the following program. Correct the error and justify your answer. CO1 (3)

```
Include <math.h>
main { }
(
FLOAT X;
X=2.5;
Y=exp(x);
Print(x,y);
)
```

- 3 Explain enumerated data types with example. CO2 (3)
- 4 Write a C program to initialize a 3×3 matrix and display its diagonal elements separately. CO2 (3)
- 5 List the four storage classes in C and mention one feature of each. CO3 (3)

- 6 Explain with an example how a union saves memory compared to a structure. CO3 (3)
- 7 What is the purpose of malloc() and free() functions? CO4 (3)
- 8 How do you open a file for reading and writing in C? Write the syntax. CO4 (3)

**PART B**

*(Answer any one full question from each module, each question carries 9 marks)*

**Module -1**

- 9 a) Write a C Program to check if a given number is a strong number or not. A CO1 5
- strong number is a number in which the sum of the factorial of the digits is equal to the number itself.
- Eg:- 145:  $1! + 4! + 5! = 1 + 24 + 120 = 145$
- b) Write a C program to display first 50 prime numbers. CO1 4
- 10 a) Write a C program to print sum of n natural numbers. Also count the number of odd numbers in it. CO1 3
- b) Explain any 3 bitwise operators and 3 logical operators in c with examples. CO1 6

**Module -2**

- 11 a) Write a C program that sorts an array of strings alphabetically using strcmp() and strcpy() functions. CO2 6
- b) What will be the output of the following C program? Justify your answer. CO2 3

```
#include <stdio.h>
#include <string.h>
int main() {
    char str1[10] = "abc";
    char str2[10] = "def";
    strcat(str1, str2);
    printf("%s", str1);
    return 0;
}
```

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- 12 a) Write a C program that reads a string from the user, counts the number of vowels, consonants, digits, and special characters and display the counts separately. CO2 5
- b) Write a C program to insert a new element into an existing array at a given position, shift the remaining elements accordingly, and print the new array. CO2 4

**Module -3**

- 13 a) Write a C program that uses a function to sort an array of integers. CO3 5
- b) Write a C program to define a structure Book (title, author, price). Write a function to accept and display a book's details. CO3 4
- 14 a) Write a C program to find the factorial of a given number using recursion. CO3 6
- b) Explain the difference between recursion and iteration. CO3 3

**Module -4**

- 15 a) Write a C program to read an array of 5 integers. Use a pointer to find and print the largest element of the array. CO4 4
- b) Explain any 5 file handling functions in C? CO4 5
- 16 a) Write a C program to concatenate two strings using pointers. CO4 5
- b) Write a C program to read integers from a text file and count how many even and odd numbers are present. CO4 4

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