

FACULTY OF ENGINEERING**B. E. (CBCS) I – Semester (Backlog) Examination, December 2019****Subject: Computer Programming & Problem Solving****Time: 3 hours****Max. Marks: 70****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (20 Marks)**

1. What is Pseudo code? (2)
2. Mention the difference between declaring a variable and defining a variable. (2)
3. What would be the output from the given program? (2)


```
int main()
{
    int i;
    for (i = 5; ++i; i- = 3)
        print f ("%d", i);
    return 0;
}
```
4. In recursion, what instance of the problem in Fibonacci series can serve as the base case? (2)
5. List any four types of preprocessor directive in C and its explanation. (2)
6. Why is it necessary to give the size of an array in an array declaration? (2)
7. What is wrong with the following code segment? (2)


```
int *P;
*P = 10;
```
8. List out any four string manipulation functions with description. (2)
9. What is the use of bit field? Illustrate with an example. (2)
10. Define stream. (2)

PART – B (50 Marks)

11. (a) Write an algorithm for withdrawing Rs.1,000/- from the bank. (5)
 - (b) Write a short notes on, with an example (2 ½ + 2 ½ =5)
 - (i) Logical operators.
 - (ii) Increment and decrement operators.
12. Distinguish between the following: (5+5=10)
 - (a) do-while and while loop.
 - (b) break and continue.
13. (a) What is the advantage of using arrays? Give the syntax for declaration, accessing and printing one dimensional array. (6)
 - (b) What is the scope of a preprocessor directive? (4)

14. Using Pointers, write a function that receives a character string and a character as argument and deletes all occurrences of this character in the string. (10)
15. (a) Write a program using structures to display the following information for each customer name, account number street, city, old balance, new balance, status. (3)
- (b) Write a program to display the contents of a file, 10 lines at a time. (7)
16. Write a C program that displays the position (or) index in the string S where the string T begins, (or) -1 if S does not contain T. (10)
17. (a) Write a brief note on auto and static storage doses. (5)
- (b) Discuss call by reference with an example. (5)

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FACULTY OF ENGINEERING**B.E. (B. C) I – Semester (Backlog) Examination, December 2019****Subject: Programming in C****Time: 3 Hours****Max. Marks: 75****Note: Answer all questions from Part-A & answer any five questions from Part-B****PART – A (25 Marks)**

1. Write the functions of various units in a digital computer? [3]
2. Write a flowchart for finding LCM of three numbers? [3]
3. What are the derived data types in C programming? [2]
4. What is the need of format specifier? Write a sample program to illustrate any five format specifiers? [3]
5. What are library functions? Write its uses in C programming? [2]
6. Differentiate between 'break' and 'continue' statements with an example? [2]
7. What is a null character? Write its uses in Strings? [2]
8. Differentiate between call by value and call by reference? [3]
9. Distinguish between read, write and an append mode in files? [3]
10. Distinguish between array of pointers and pointer to an array? [2]

PART – B (5 × 10 = 50)

11. (a) Explain in detail, the sequence of steps to be followed in writing an algorithm for finding the sum of first 'N' natural numbers? [5]
(b) What is a flowchart? Write the symbols used in flowchart? [5]
12. (a) List the basic data types, their sizes and range of values supported by 'C' language? [6]
(b) Write a C program to swap (exchange) the values of two variables without using temporary Variable? [4]
13. (a) Explain about various logical operators and bitwise operators available in C language with Examples? [5]
(b) Write C program to convert the given decimal number into binary number. [5]
14. (a) Explain about different storage classes with examples. Discuss their uses and scope? [6]
(b) Write a recursive function for finding the factorial value of a given number? [4]
15. (a) Explain different string handling functions available in C language? [4]
(b) Write a program to perform addition and multiplication of two matrices using functions? [6]
16. (a) Discuss various valid arithmetic operations that can be performed on pointers in C? [6]
(b) Explain the following functions in file operations: [4]
(i) getw() (ii) putw() (iii) fscanf() (iv) fprintf()
17. (a) Write a C program to read two files and concatenate two files and copy into third file? [5]
(b) Explain the concept of Nested structures with a sample C program? [5]

FACULTY OF ENGINEERING

B.E. I-Year (Backlog) Examination, December 2019

Subject : Mathematics-II

Time : 3 hours

Max. Marks : 75

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

PART – A (25 Marks)

- | | | |
|----|---|---|
| 1 | Define integrating factor. Find an integrating factor of the differential equation $(x^3+y^3) dx - x^2y dy = 0$. | 3 |
| 2 | Find orthogonal trajectories of the family $y = cx^2$. | 2 |
| 3 | Solve $y'' + 2y' + y = 0$. | 3 |
| 4 | Determine whether the functions $e^{-x}, e^x, \sin hx$ are linearly dependent. | 2 |
| 5 | Find the power series solution of $y' = 2y$ about $x = 0$. | 3 |
| 6 | State Rodrigue's formula. | 2 |
| 7 | Define error and complementary error functions. Show that $\text{erf}(x) + \text{erfc}(x) = 1$. | 3 |
| 8 | Find the solution of the Bessel's equation $x^2y'' + xy' + \left(x^2 - \frac{1}{4}\right)y = 0$ in terms of Bessel's functions. | 2 |
| 9 | Find $L^{-1}\left\{\frac{1}{s(s+1)}\right\}$. | 3 |
| 10 | Evaluate $\int_0^{\infty} te^{-t} \sin t dt$ using Laplace transform. | 2 |

PART – B (50 Marks)

- | | | |
|-------|---|---|
| 11 a) | Solve $\frac{dy}{dx} + \frac{y}{x} = \frac{y^2}{x^2}$ | 5 |
| b) | If the temperature of the air is 20°C and a body cools from 140°C to 80°C in 20 minutes, find when the temperature will be 35°C . | 5 |
| 12 a) | Find the general solution of $(D^2-7D+6)y = e^{2x}(1+x)$. | 5 |
| b) | Solve the system of equations $\frac{dy_1}{dt} = y_2, \frac{dy_2}{dt} = -9y_1$. | 5 |

- 13 State and prove orthogonal property of Legendre polynomials $P_n(x)$. 10
- 14 a) Define Gamma function. Show that $\Gamma(1/2) = \sqrt{\pi}$. 5
 b) Express $J_3(x)$ in terms of $J_0(x)$ and $J_1(x)$. 5
- 15 a) Find the Laplace transform of $f(t) = \begin{cases} 1, & 0 < t < a \\ -1, & a < t < 2a \end{cases}$, $f(t+2a) = f(t)$. 5
 b) Find $L^{-1}\left\{\frac{s}{(s^2+1)^2}\right\}$ using convolution theorem. 5
- 16 a) Solve $(x^2 + y^2 + x)dx + y dy = 0$, $y(1) = 1$. 5
 b) Solve $x^2y'' - 3xy' + 4y = x^3$ 5
- 17 a) State the generating function of Legendre polynomials $P_n(x)$. Show that
 i) $P_n(-1) = (-1)^n$ and ii) $P'_n(-1) = (-1)^{n-1} \frac{n(n+1)}{2}$. 5
 b) Evaluate $\int_0^1 x^m (1-x)^n dx$ using Beta and Gamma functions. 5
