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K – 4366

Reg. No. : .....

Name : .....

**Sixth Semester B.Tech. Degree Examination, September 2020**

**08.603 : NUMERICAL TECHNIQUES AND COMPUTER PROGRAMMING (E)**

**(2008 Scheme)**

Time : 3 Hours

Max. Marks : 100

PART – A

Answer **all** questions. **Each** question carries **4** marks.

1. Write a note on the operators in C.
2. Explain the use of a switch statement in C with an example.
3. What is type casting? Explain explicit type casting in C.
4. Differentiate between the break and continue statements in C.
5. What are the uses of functions in C language? Explain with an example.
6. Write a note on command line arguments.
7. Write a note on the storage classes in C.
8. Explain the use of *malloc*( ) instruction in C with a example.
9. Write a program to find the determinant of a matrix.
10. Write program to find Eigen values and corresponding vectors of a matrix.

**(10 × 4 = 40 Marks)**

P.T.O.

PART – B

Answer **any one** questions from **each** Module.

**Module – I**

11. (a) Write a C program to sort a given list of numbers. **10**
- (b) Write a C program to find the length of a string without using library functions. **10**

OR

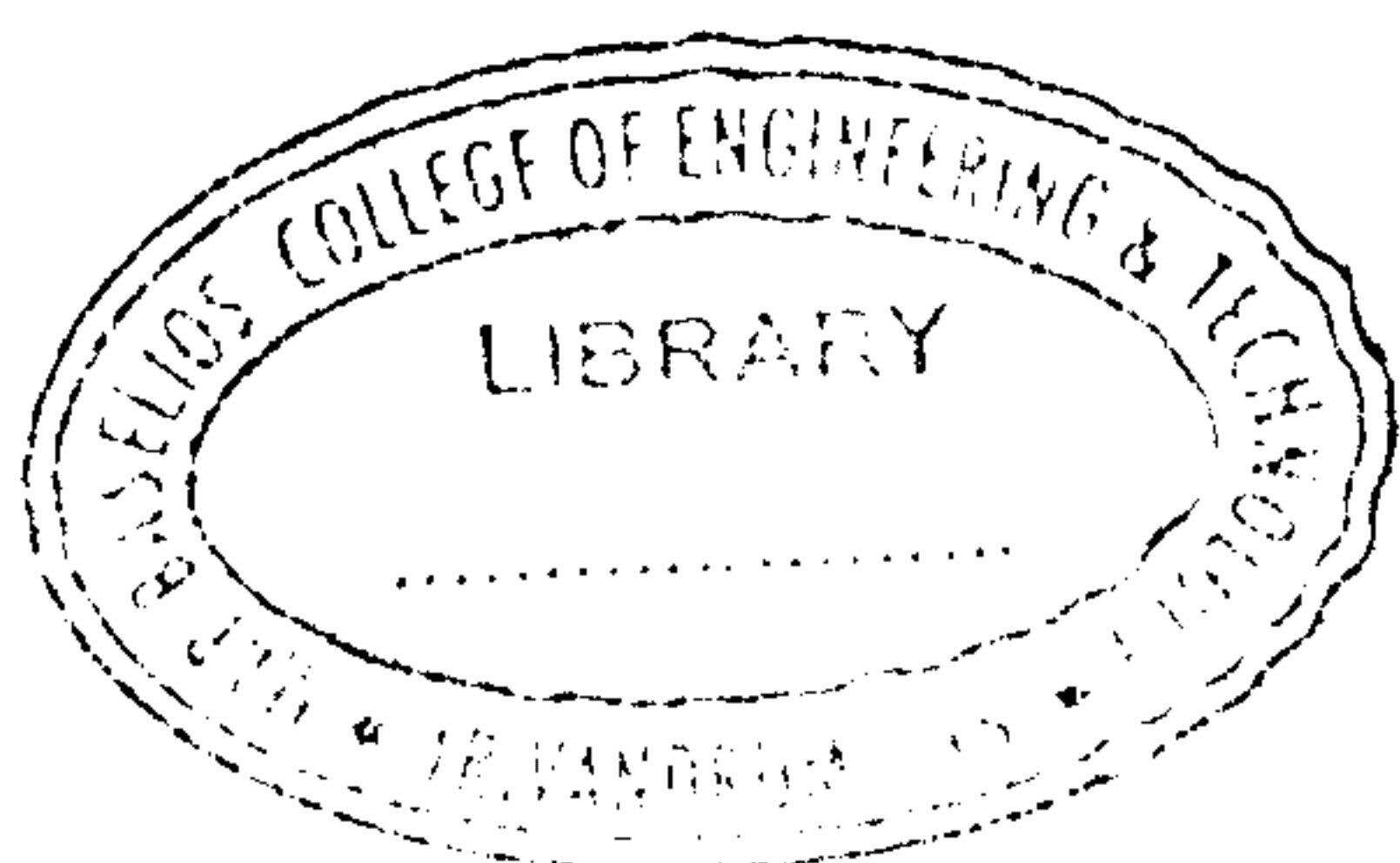
12. (a) Explain the file operations in C with an example. **10**
- (b) Write a C program to manage student information which includes roll, name, mark 1, mark 2, mark 3 and total marks. Also write a function to print the name of students who had scored total marks greater than a given value. **10**

**Module – II**

13. (a) Write a recursive C function to find the  $n^{\text{th}}$  Fibonacci number. **8**
- (b) What are the basic operations on a stack? Implement a Stack using pointers. **12**

OR

14. (a) Write a C program to multiply two matrices. **10**
- (b) Implement a queue using pointers. **10**



### Module – III

15. (a) Write a C program for numerical integration of the function  $f(x)$  from  $x = a$  to  $x = b$  using Simpson's 1/3 rule. **10**
- (b) Given a differential equation  $dy/dx = f(x, y)$  with initial condition  $y(x_0) = y_0$ . Write a C program to find its approximation solution using Euler's method. **10**

OR

16. (a) Write a C program to find  $y(x')$  for a differential equation for any  $x'$  using Runge-kutta method. **10**
- (b) Write a program to solve the set linear equations using Gauss Jordan Elimination. **10**

**(3 × 20 = 60 Marks)**

