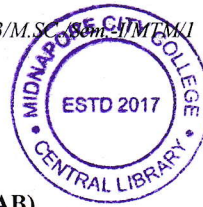


**PG CBCS**  
**M.Sc. Semester- I Examination, 2023**  
**MATHEMATICS**  
**PAPER: MTM 104**  
**(ADVANCED PROGRAMMING IN C AND MATLAB)**



Full Marks: 50

Time: 2 Hours

The figures in the right-hand margin indicate full marks.  
 Candidates are required to give their answers in their own words as far as practicable.

**GROUP-A****1. Answer any FOUR of the following questions:****2×4=8**

- a) What is the use of gets() and puts()?
- b) Write down any two string handling functions with example?
- c) Difference between clear all & close all.
- d) How is a matrix defined?
- e) Explain the input statement of the following program:

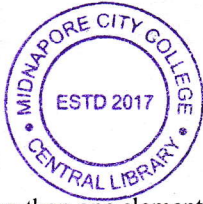
```
#include <stdio.h>
void main()
{
char text[50];
scanf ("%s[ ABCDEFGHIJKLMNOPQRSTUVWXYZ]", text);
}
```

- f) Suppose that x, y and z are integer variables which have been assigned the values 2, 3 and 4 respectively. What will be the output of the following statement in C.

$$x * = -2(y + z)/3$$
**GROUP-B****2. Answer any FOUR of the following questions:****4×4=16**

- a) What is pointer? Write a C program to demonstrate call by reference.
- b) What is string? Write a C program to check a string is palindrome or not.
- c) Function of 'for' loop in MATLAB. What is isprime function in MATLAB.
- d) What is MATLAB programming? What are the difference interfaces available at the runtime of MATLAB programming.
- e) The exponential power of x is approximately by the following infinite series  $e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$  Write a program to find out how many terms will be sufficient in the right-hand side of the given expression to ensure that the result is within the 5% error of the exact value.

*(P.T.O)*



(2)

- f) How are more than one element accessed from an array? Write a program to find the value of a determinant. 2+2

**GROUP-C**

3. Answer any **TWO** of the following questions:

2×8=16

- a) (i) Write a program that will generate a table of values for the equation  $y = 2e^{-0.1t}\sin(0.5t)$  where  $t$  varies between 0 and 60. Allow the size of the  $t$ -increment to be entered as an input parameter. 5+3  
(ii) In what way does not an array differ from an ordinary variable? 5+3
- b) What is dynamic memory allocation? Write a short note on `calloc()` and `malloc`. 2+(3+3)
- c) What do you mean by M-file in MATLAB? Create a function to add three numbers in MATLAB.
- d) (i) What is the procedure to find the inverse of a matrix? Write a function to find  $n!$ .  
(ii) What is the differences between `disp()` and `fprintf()` functions? Illustrate with examples. Write a program to display a list of numbers in reverse order. (2+2)+(2+2)

**[Internal Assessment-10 Marks]**

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