

**2025/FYUG/EVEN/SEM/
MATSEC-151/216**

FYUG Even Semester Exam., 2025

MATHEMATICS

(2nd Semester)

Course No. : MATSEC-151

(Mathematical Programming in C)

Full Marks : 50

Pass Marks : 20

Time : 2 hours

*The figures in the margin indicate full marks
for the questions*

UNIT—I

1. Answer any *three* of the following questions :

1×3=3

- (a) Write the syntax for variable declaration in C.
- (b) Write the syntax to define a symbolic constant.
- (c) How will you write the arithmetic expression $a^2 + 10a - 8$ in C?

(d) How will you assign the value 100 to the variable x at the time of variable declaration?

2. Answer any one of the following questions:

(a) Which of the following are valid variable name?
Char, First_name, List one, 2_int_type

(b) What are trigraph characters?

3. Answer any one of the following questions:

(a) Write the rules for naming identifiers.
(b) What are symbolic constants? How are they useful in writing programs?

UNIT—II

4. Answer any three of the following questions:

(a) What are the relational operators in C?
(b) Write the C expression for
$$\text{Torque} = \frac{2m_1m_2}{m_1 + m_2} \cdot g$$

(c) Determine the value (true or false) of the logical expression $a == c || b > a$ if $a = 5$, $b = 6$ and $c = 7$.

(d) The variable a is declared as int, state whether the following statement is true or false :
 $a = \frac{1}{3} + \frac{1}{2} + \frac{1}{3}$, assigns the value 1 to a .

5. Answer any one of the following questions : 2

(a) What is the error, if any, in the following segment?

```
int x = 10;  
float y = 4.25;  
x = y%x;
```

(b) Determine the value of the logical expression
 $b > 15 \ \&\& \ c < 0 || a > 0$
if $a = 5$, $b = 10$ and $c = -6$.

6. Answer any one of the following questions : 5

(a) Write a C program to read two integers m and n and to decide and print whether m is a multiple of n .

(b) Write a note on hierarchy of operators in C.

(5)

UNIT—III

UNIT—IV

7. Answer any three of the following questions:

10. Answer any three of the following as directed :

1×3=3

(a) Write the general syntax of for loop.
(b) Write the general syntax of do-while statement.

(a) Every program must have a _____ function.

(Fill in the blank)

(c) What is the use of goto statement?
(d) Give example of an exit-controlled loop.

(b) Write the three elements of a user-defined function.

(c) scanf is an example of _____ (library/user-defined) function.

(Choose the correct option)

8. Answer any one of the following questions:
(a) Write a program to display the larger of two given numbers.

(d) A variable declared inside a function is called _____ variable. (Fill in the blank)

(b) Find errors, if any, in the following segment :

```
if (x + y = z && y > 0)
printf("X");
```

11. Answer any one of the following questions : 2

(a) Distinguish between global and local variables.

(b) What is recursion?

9. Answer any one of the following questions :
(a) Write the rules for switch statement.
(b) Write a program to find the sum of the digits of a positive integer.

12. Answer any one of the following questions : 5

(a) Write a C program to compute the sum of first n natural numbers using function.

1422

J25/1422

(Turn Over)

(b) Write a brief note on the advantage of using user-defined functions.

(7)

UNIT—V

13. Answer any three of the following questions:

- (a) Write the syntax for declaring a two-dimensional array.
- (b) Write the general syntax for initializing a one-dimensional array.
- (c) What is the first subscript of a one-dimensional array in C?
- (d) What happens when an array with a specified size is assigned with values fewer than the specified size?

14. Answer any one of the following questions :

- (a) Write a C program to read and display a one-dimensional array.
- (b) Which of the following is/are correct?
`int matrix [3][5];`
`int matrix [5], [3];`
`int matrix [3, 5];`

15. Answer any one of the following questions : 5

- (a) Write a program to find the largest element in an integer array.
- (b) Write a program to find the sum of two arrays.
