

(FOR THE CANDIDATES ADMITTED
DURING THE ACADEMIC YEAR 2024 ONLY)

24PMS3E1

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI
END-OF-SEMESTER EXAMINATIONS : NOVEMBER-2025
M.Sc.-MATHEMATICS **MAXIMUM MARKS: 75**
SEMESTER: III **TIME : 3 HOURS**

LATEX

SECTION – A **(10 X 1 = 10 MARKS)**

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS.

(K1)

1. The LaTeX equivalent of `<h1>Logical Markup </h1>` is _____.
 (a) `\chapter{Logical Markup}` (b) `\subsection{Logical Markup}`
 (c) `\section{Logical Markup}` (d) `\title{Logical Markup}`
2. In the quote environment, what happens to the margins?
 (a) Margins remains unchanged (b) Only the left margins increases
 (c) Only the right margins increases (d) Both left and right margins increases
3. Which page style allows users to explicitly define page titles using `\markright` or `\markboth`?
 (a) plain (b) headings (c) my headings (d) empty
4. Which LaTeX command removes indentation at the beginning of the current paragraph?
 (a) `\noindent` (b) `\indent` (c) `\noind` (d) `\skipindent`
5. What is required in LaTeX to correctly display function names such as sine or logarithm?
 (a) Writing them in curly braces `{}` (b) Adding a percent sign `%`
 (c) Using a backslash `\` before the function name (d) Wring them outside of math mode

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. What distinction is often forgotten when using Plain TeX?
7. What is meant by declaration in text environment?
8. List the page numbering styles available in LaTeX.
9. Give an example of creating a numbered list using the enumerate environment in LaTeX.
10. How can the expression $\frac{a^2 - b^2}{a + b} = a - b$ be written in LaTeX?

SECTION – B

(5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

- 11.a) Explain the role of the format file and source file during a TeX program processing run, and illustrate how they contribute to typesetting operations.
 (OR)
 b) Explain the structure of a LaTeX source file with reference to the preamble and the body. Illustrate your answer with an example.
- 12.a) What is LaTeX environment? Describe its structure with suitable example.
 (OR)
 b) How the date inserted and controlled in a LaTeX document. Give suitable examples.
- 13.a) Discuss the role of the `\usepackage` command in LaTeX.
 (OR)
 b) Explain how single and double column page formatting is achieved in LaTeX. Give suitable examples.

(CONTD.....2)

- 14.a) Illustrate with examples how font commands are used in LaTeX to change family, shape, and series.

(OR)

- b) Describe the use of the `\footnote` command in LaTeX with an example.
- 15.a) Write a LaTeX code for the following mathematical equations:

$$(x + y)(x - y) = x^2 - xy + xy - y^2$$

$$= x^2 - y^2 \quad (1)$$

$$(x + y)^2 = x^2 + 2xy + y^2 \quad (2)$$

(OR)

- b) Write a LaTeX code for the following mathematical equation:

$$a_{11}x_1 + a_{12}x_2 + \cdots + a_{1n}x_n = b_1$$

$$a_{22}x_1 + a_{22}x_2 + \cdots + a_{2n}x_n = b_2$$

.....

.....

$$a_{n1}x_1 + a_{n2}x_2 + \cdots + a_{nn}x_n = b_n$$

SECTION – C

(5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.

(K4 (Or) K5)

- 16.a) Explain the concepts of typographical markup and logical markup in detail. Compare their features with suitable examples. Also discuss the significance of markup languages like HTML, LaTeX, and XML in electronic publishing.

(OR)

- b) Discuss the development and significance of LATEX 2 ϵ . Explain the reasons behind its release, the contributions of the LATEX3 project.

- 17.a) What are the lengths in LaTeX? Classify them into fixed and rubber lengths and explain their significance in document design. Write the syntax for setting lengths and give at least two examples.

(OR)

- b) Explain the challenges in typing special symbols directly in LaTeX. How does the `inputenc` package solve this problem? Discuss with suitable coding options.

- 18.a) Discuss how LaTeX generates and prints a table of contents. Explain the role of `tocdepth`, the `\tableofcontents` command, and the methods for adding additional entries.

(OR)

- b) What are the major components of a LaTeX page format? How can the text width, margins, and spacing be customized with the `\setlength` command?

- 19.a) Analyze the different LaTeX environments used for centering, indenting, and justifying text. Compare their functionalities with suitable examples.

(OR)

- b) Describe the mechanism of text alignment in `parboxes` and `minipages`. How does the positioning argument influence the presentation of content?

- 20.a) Demonstrate with examples how LaTeX typesets constants, variables, exponents, fractions, and roots.

(OR)

- b) Analyze the use of the `array` environment in LaTeX for typesetting matrices, determinants, and systems of equations. Explain its structure, formatting options and applications with suitable examples.
