

Total number of printed pages: 2

1 SEM MCA(N (CBCS SWUL 109)
2022
(DECEMBER)
COMPUTER APPLICATION
Paper : MCA-109 (Scientific Writing Using LaTeX)
Full Marks : 60
Pass Marks : 27
Time : Three hours

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

Answer the following

1x5=5

- (a) State one advantage of LaTeX over a word processor.
- (b) How is the % symbol produced in LaTeX? Write the command.
- (c) Give an example of a LaTeX editor.
- (d) Write a LaTeX command to display the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

- (e) How can you create a bulleted list in LaTeX?

Answer the following questions

2x5=10

- (a) What is a LaTeX package? Give two examples of commonly used LaTeX packages.
- (b) Explain the difference between `\textbf` and `\emph` commands in LaTeX.
- (c) Write the LaTeX command to create a section with the title "Introduction."
- (d) How do you add comments in LaTeX code? Provide an example.
- (e) Explain the use of the `align` environment in LaTeX with an example.

Answer any three of the following

5x3=15

- (a) Describe the structure of a LaTeX document, including the preamble and main document content.
- (b) How do you create tables in LaTeX? Write commands to create a simple table with two columns and two rows.
- (c) Discuss the process of inserting figures in LaTeX using the `graphicx` package.
- (d) Write the commands for creating a numbered list in LaTeX. Provide an example.
- (e) Explain how mathematical symbols are displayed in LaTeX. Provide examples of two symbols.

Answer any three of the following

10x3=30

- (a) Write an essay on the advantages and disadvantages of using LaTeX for scientific writing.
- (b) Explain the different types of LaTeX environments with examples. Include the `itemize`, `enumerate`, and `tabular` environments.
- (c) Describe the use of bibliographies in LaTeX. Explain how the `bibtex` tool is used for reference management.
- (d) Create a sample LaTeX code to demonstrate the use of custom theorem styles. Include examples of theorem, lemma, and proof environments.
- (e) Discuss the process of creating and customizing headers and footers in LaTeX documents using the `fancyhdr` package.