ST. PAUL'S CATHEDRAL MISSION COLLEGE DEPARTMENT OF MATHEMATICS Subject-SEC-2.1 (Python Programming and Introduction to LaTeX) Second Semester

Instruction: Answer all the questions with clear handwriting and submit to the respective teacher within 20 days from the date provided below Assignment-1 Date: 24.04.2025

- 1. Answer All the questions.
 - (a)_Mention any two optional arguments that can be given in documentclass command.
 - (b) Write the commands in $\text{IAT}_{\text{E}}X$ to get the following output: $_{11}Na^{23}$.
 - (c) Write the commands in $\text{IAT}_{\text{E}}X$ to get the following output: $\frac{\alpha+\beta}{\gamma}$.
 - (d) What is the difference between the commands \equationarray and \equationarray*
 - (e) Explain **enumerate** environment with an example.
 - (f) Correct the following input as per LATEX commands: \(\left \{ \frac{\mu}{lambda} \right})
 - (g) Write the commands in LATEX to get the following output: $2^{y^{x^{2}+2}}$.
 - (h) Write the commands in LATEX to get the following output: $\forall x \in \mathbb{R}$:
- 2. Answer the following questions.
 - (a) What is LaTeX? How is it different from MS Word? Explain with an example.
 - (b) Write the input command in LATEX to produce the following:
 - (a) $\frac{1}{3}\vec{\alpha} + \frac{2}{3}\vec{\beta} = a\hat{i} b\hat{j} + c\hat{k}$

(b)
$$f(x) = A_0 + \sum_{n=1}^{\infty} (A_n \cos(nx) + B_n \sin(nx))$$

(c) Write a block of LaTeX code to display the following matrices:

- (i) $\begin{bmatrix} 3 & 12 & | & 15 \\ 2 & 6 & | & 8 \end{bmatrix}$ (ii) $\begin{pmatrix} \cos \beta & \sin \alpha & \tan \delta \\ 1 & \omega^2 & \omega^{12} \\ \frac{1}{3} & 8 & \sqrt{12} \end{pmatrix}$
- (d) Write a block of LaTeX code to display the following table:

Name	Maths	Physics	Chemistry
A Roy	97	97	98
B Kundu	89	85	88
C Khatun	76	88	81

(e) Write a block of LATEX code to print the following system of equations in its present form:

2.1x + 3.3y - 5.2z + 7.1u = 10.85.2z + 9.2u = 7.02.3x + 7.4y - 1.5z + 8.1u = 2.13.2y + 5.1z + 2.3u = 2.0

- (f) Write the command in LATEX to create the following list:
 - i. Fundamental Data Type
 - Integers
 - Floating point numbers
 - ii. Derived Data Type
 - Arrays
 - Structures