

# Fourth Programming Assignment

Full Marks: 20

(Submission Deadline: 15<sup>th</sup> November, 2022)

1. Write a PYTHON program to compute the minimum number of denominations to provide change for a given amount of money in some currency having 1, 5, 10, 20, 25, and 50 units.

10

2. Prepare the LaTeX document for the following two texts.

i)

Hello World!

Your Name

January 1, 1831

## 1 Getting Started

**Hello World!** Today I am learning L<sup>A</sup>T<sub>E</sub>X. L<sup>A</sup>T<sub>E</sub>X is a great program for writing math. I can write in line math such as  $a^2 + b^2 = c^2$ . I can also give equations their own space:

$$\gamma^2 + \theta^2 = \omega^2 \quad (1)$$

“Maxwell’s equations” are named for James Clark Maxwell and are as follow:

$$\vec{\nabla} \cdot \vec{E} = \frac{\rho}{\epsilon_0} \quad \text{Gauss's Law} \quad (2)$$

$$\vec{\nabla} \cdot \vec{B} = 0 \quad \text{Gauss's Law for Magnetism} \quad (3)$$

$$\vec{\nabla} \times \vec{E} = -\frac{\partial \vec{B}}{\partial t} \quad \text{Faraday's Law of Induction} \quad (4)$$

$$\vec{\nabla} \times \vec{B} = \mu_0 \left( \epsilon_0 \frac{\partial \vec{E}}{\partial t} + \vec{J} \right) \quad \text{Ampere's Circuital Law} \quad (5)$$

Equations 2, 3, 4, and 5 are some of the most important in Physics.

## 2 What about Matrix Equations?

$$\begin{pmatrix} a_{11} & a_{12} & \dots & a_{1n} \\ a_{21} & a_{22} & \dots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} & \dots & a_{nn} \end{pmatrix} \begin{bmatrix} v_1 \\ v_2 \\ \vdots \\ v_n \end{bmatrix} = \begin{bmatrix} w_1 \\ w_2 \\ \vdots \\ w_n \end{bmatrix}$$

