### ****Project Development Phase****

**Model Performance Test**  
**Date**: 1 july 2025  
**Team ID**: -

**Project Name**: CleanTech  
**Maximum Marks**:

### ****Model Performance Testing Table****

| **S.No.** | **Parameter** | **Screenshot / Values** |
| --- | --- | --- |
| 1 | Data Rendered | Images from three classes: biodegradable, recyclable, trash |
| 2 | Data Preprocessing | Data cleaned, resized, structured using pandas |
| 3 | Utilization of Data Filters | Not applicable in image dataset format |
| 4 | DAX Queries Used | Not applicable (handled by Keras/TensorFlow) |
| 5 | Dashboard Design | Real-time prediction using Flask web interface No of Visualizations: 3 |
| 6 | Report Design | Flask UI showing uploaded image and predicted class |

### ****Collect the Dataset****

Collected from Kaggle

Classes: Biodegradable, Recyclable, Trash

Formats: .jpg, .png

Link: Dataset

### ****Activity 1.1 – Importing Libraries****

python

CopyEdit

import tensorflow as tf import keras import pandas as pd import numpy as np import matplotlib.pyplot as plt import os, random

### ****Activity 1.2 – Read the Dataset****

Use pandas to load the dataset

Supported formats: .csv, .txt, .json, .zip

### ****Data Visualization****

Display random images from each folder using IPython.display and random

Confirm correct image categorization visually

### ****Class-wise Prediction****

✅ Biodegradable → Predicted Correctly

✅ Recyclable → Predicted Correctly

✅ Trash → Predicted Correctly

### ****Data Augmentation****

Common techniques: flipping, rotating, scaling, brightness

**Skipped** here because dataset was already preprocessed

Reduced complexity, training time slightly increased

### ****Project Structure****

cpp

CopyEdit

project/

├── app.py

├── templates/

├── static/

└── Vgg16.h5

### ****Conclusion****

CleanTech enables fast, accurate waste classification using AI. With real-time integration via Flask, this project supports smart waste management initiatives and environmental sustainability.