LAB 10 : (Perform Compression on MNIST dataset using auto encoder)

AIM: To implement an Autoencoder neural network for compressing and reconstructing images from MNIST dataset

Pseudo Code:

- Import required libraries
- Load the MNIST dataset
- Normalization of pixel value
- Flatten the images into vectors
- Define the Auto encoder model:
  - encoder
  - Decoder
- Compile the model with optimizer
- Train the model
- Use encoder part to compress images
- Use decoder part to reconstruct image
- Visualize

Observation

→ The auto encoder successfully learns to reconstruct MNIST digits after several epochs

→ The training loss decreases gradually

→ The compressed representation is much smaller in size compared to original

→ The compression ratio depends on the bottleneck layer size.

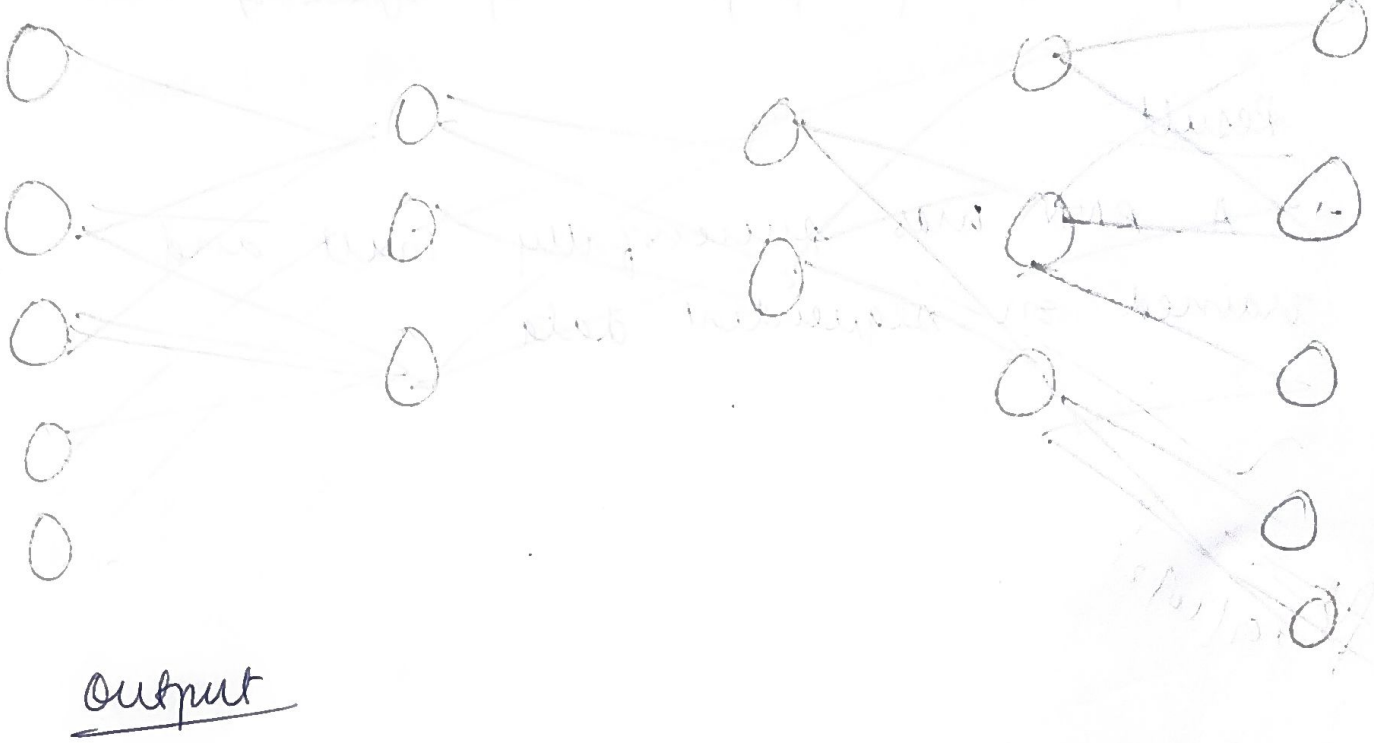
Result:

→ An autoencoder model was successfully implemented on MNIST dataset.

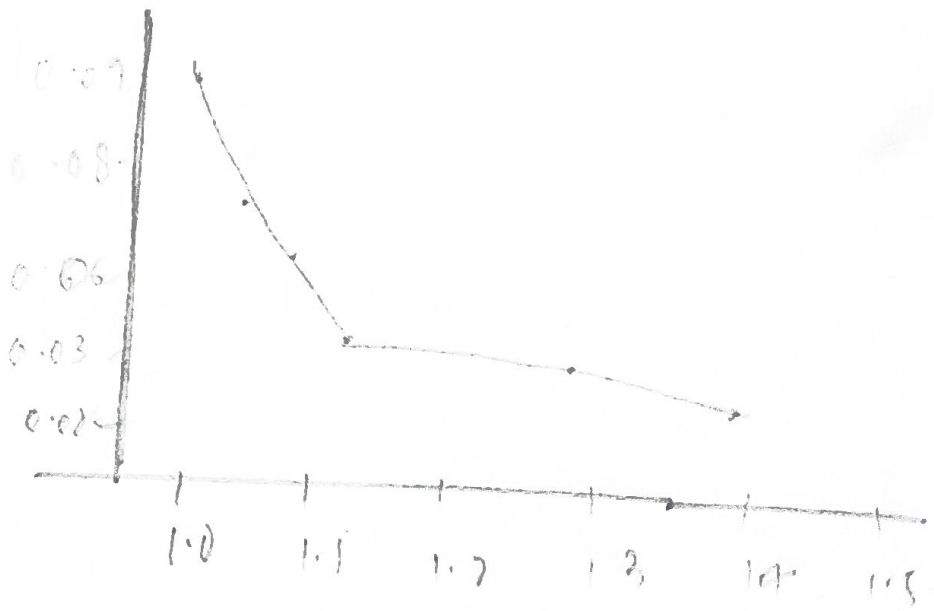
Eg.

output :

Train Test loss upon epoch



output



epoch [1, 5] , loss = 0.0621

epoch [2, 5] loss = 0.0322

epoch [3, 5] loss = 0.0248

epoch [4, 5] loss = 0.0213

epoch [5, 5] loss = 0.0197