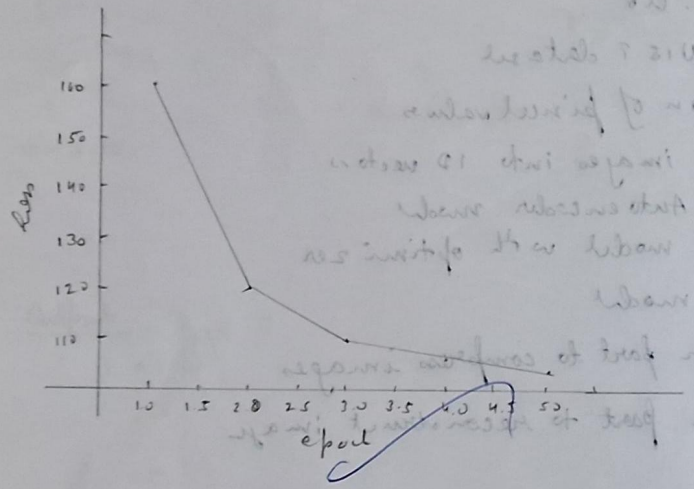
Output

Epoch [1,5] Loss : 164.0216
Epoch [2,5] Loss : 127.5716
Epoch [3,5] Loss : 114.8072
Epoch [4,5] Loss : 111.6099
Epoch [5,5] Loss : 109.2293



Ex: 11 Experiment using Variational Autoencoder

AIM: To implement and analyze a variational autoencoder for learning latent representation of MNIST dataset

Pseudo code:

Import lib
Load MNIST dataset
Define Encoder Network
Sampling step
Define decoder network
Define loss function
Train the model
→ Forward pass
Compute loss
Back propagate and update weights
After training
Reconstruct test images
Generate new images

Observation

During training, the reconstruction loss gradually dec. indicating better learning of input

The divergence stabilizer over time showing that the latent space was learning a valid distribution

The model successfully learned a smooth latent space where interpolation between two points produced

meaningful transition between digits.

Result

An variational autoencoder model successfully implemented on MNIST dataset;

Accuracy - 80.67 %

Sq.t