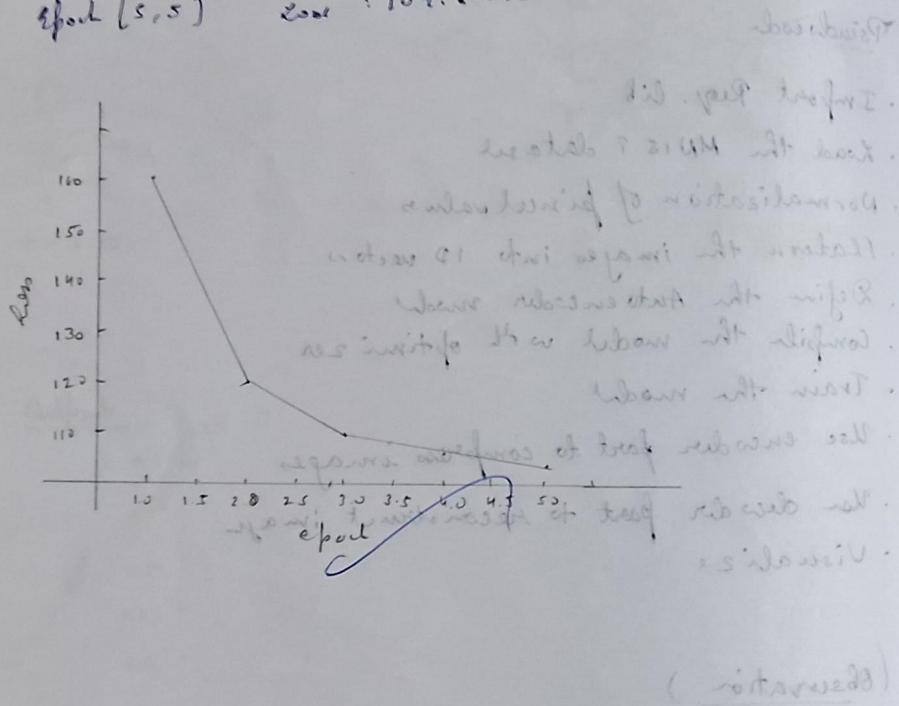


# Output

Epoch (1, 5)	Loss : 189.0216
Epoch (2, 5)	Loss : 121.5715
Epoch (3, 5)	Loss : 147.8092
Epoch (4, 5)	Loss : 111.6099
Epoch (5, 5)	Loss : 109.8223



# L-11 Experiment with Variational Autoencoder

AIM: To implement and analyse 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 propagation and update weights

After training,

Deconst test images

Generate new images

## Observation

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

The divergence stabilizes over time showing that the latent space was learning valid distributions

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

meaningful transition between digits.

## Result

An variational autoencoder model successfully implemented on MNIST dataset;

Accuracy - 80.67 % P. 321

01. 2N1

68.5 ± 1

understand generation

To train model P3. MNIST image dataset

To choose training approach and quality of generated image

Procedure

Import libraries and set device

Load CIFAR-10 dataset normalize to [0,1], cut

Batch size 32 Generator : noise of dimension 20, initializate weight (Normal with mean 0, std = 0.02)

After loss and optimizer

for each epoch

Train discriminator on real images

Train generator to fool discriminator

then generate batch of generated images for visualization

Random noise