Q1) Network Degradation problem generally occurs in Neural Networks when they go deeper into more layers and instead of increase in performance it gets degraded as the gradients can either vanish (or) burst during backpropagation.

⇒ ResNet (Residual Network) works by learning the Residual (or) Difference between the input & output.

⇒ ResNet ensures that gradients can flow directly through the network without vanishing / exploding by doing Identity mapping.

⇒ $F(x) = H(x) - x$

H(x) → Desired mapping

x → Input

⇒ (Q2) Transfer learning is a new-age learning process where we try to use a Pre-Trained model, which means it is designed/trained on a large dataset, on a new small task.

⇒ Freezing the layers means fixing the weights of layers so that they do not get changed/updated during the training process on the new task.

By Freezing the layers we can retain the learned features of the Pre-Trained model which will be helpful to increase performance on new small dataset.