Pre Lab:-

1. Explain the fundamental difference between regression and classification tasks in the context of machine learning.
Regression predicts continuous numerical values, while classification assigns inputs to discrete categories or labels.

2. Discuss common loss functions used for regression tasks.
Common loss functions include Mean Squared Error (MSE), Mean Absolute Error (MAE), and Huber Loss, all of which measure the difference between predicted and actual values.

3. In the context of regression, why is data normalization important?
Data normalization ensures features are on a similar scale, improving model convergence and preventing dominance of larger-scale features during training.

VIVA:-

1. In your regression model, what activation function did you choose for the output layer, and why?
For regression tasks, a linear activation function is typically used in the output layer to allow for continuous, unrestricted output values.

2. Regression models are often sensitive to outliers. How did you address the potential impact of outliers in your dataset during the preprocessing stage, and why is this important?
Outliers were handled by techniques like removing or scaling them, or using robust scaling methods like the median. This is important to prevent skewed predictions and reduce model bias.

3. In a regression task, how can you interpret the predictions made by the deep neural network?
Predictions are interpreted as continuous numerical values that represent the estimated output based on the input features after passing through the network's layers.

4. Are there any challenges associated with interpreting the model's decisions in comparison to a linear regression model?
Yes, deep neural networks are often "black-box" models, making their decisions harder to interpret than linear regression, which provides direct insight into feature importance through coefficients.