In the context of the Elastic Net model, both Lasso and Ridge regularization techniques are used to control the complexity of the model and prevent overfitting. The Elastic Net model combines both Lasso and Ridge regularization to take advantage of their respective benefits.

1. **Lasso regularization:** Lasso, also known as L1 regularization, adds a penalty term to the model's objective function that encourages the coefficients of less important features to be exactly zero. This leads to sparse feature selection, meaning that the resulting model will only include the most relevant features while setting others to zero. Lasso can effectively perform feature selection by eliminating irrelevant or redundant features.
2. **Ridge regularization:** Ridge, also known as L2 regularization, adds a penalty term to the objective function that encourages the model's coefficients to be small but does not force them to be exactly zero. Ridge regularization helps to reduce the impact of individual features without eliminating them entirely. It can help handle multicollinearity (high correlation) among the features by shrinking the coefficients of correlated variables.

The Elastic Net model combines the Lasso and Ridge regularization techniques by adding both penalty terms to the objective function. The Elastic Net objective function can be represented as:

**minimize ||y - Xw||^2 + lambda1 \* ||w||\_1 + lambda2 \* ||w||^2**

where:

* **y** represents the target variable
* **X** is the matrix of feature values
* **w** is the vector of coefficients to be estimated
* **||.||^2** denotes the squared Euclidean norm
* **||w||\_1** represents the L1 norm (sum of absolute values of the coefficients)
* **||w||^2** represents the L2 norm (sum of squared values of the coefficients)
* **lambda1** and **lambda2** are the regularization parameters that control the strength of the Lasso and Ridge regularization, respectively.

By adjusting the values of **lambda1** and **lambda2**, we can control the balance between Lasso and Ridge regularization in the Elastic Net model. This allows for the simultaneous selection of relevant features (sparse feature selection) and handling of multicollinearity in the data.