Question 1
What is the optimal value of alpha for ridge and lasso regression? What will be the changes in the model if you choose double the value of alpha for both ridge and lasso? What will be the most important predictor variables after the change is implemented?

Optimal Value of alpha for lasso regression is 100 and for ridge regression is 0.3.
If I double the value of alpha the r2 score decreases and the mean squared value increases.

SalePricelog
Neighborhood_NoRidge
Exterior2nd_ImStucc
Neighborhood_MeadowV
HouseStyle_1.5Unf

Question 2
You have determined the optimal value of lambda for ridge and lasso regression during the assignment. Now, which one will you choose to apply and why?

When having too many variables and our target is feature selection, then we will use Lasso Regression. When we don't want to get too large coefficients and reduction of coefficient magnitude is our main target, then we will use Ridge Regression.

Question 3
After building the model, you realised that the five most important predictor variables in the lasso model are not available in the incoming data. You will now have to create another model excluding the five most important predictor variables. Which are the five most important predictor variables now?

Top 5 Lasso predictors were:
HouseStyle_1Story, MasVnrType_None, RoofStyle_Hip, OverallQual and Neighborhood_IDOTRR

Question 4

How can you make sure that a model is robust and generalisable? What are the implications of the same for the accuracy of the model and why?

In order to make a model robust and generalisable we must take care it doesn't overfit. Overfitted model has very high variance and a smallest change in data affects the model prediction heavily. Overfitted model will identify all the patterns of a training data but fail to pick up the patterns in unseen test data; means model should not be complex. Too complex model will have a very high accuracy. So, to make our model more robust and generalisable, we will have to decrease variance which will lead to some bias. Addition of bias means that accuracy will decrease. In general, we must find some balance between model accuracy, complexity and error. This can be achieved by Regularisation techniques like Ridge Regression and Lasso.