Post lab 3

Task 5:

1. The main difference is of the ripple factor. The ripple factor tells us how much near our rectified wave is to the original DC wave. The ripple factor varies across all four rectifiers. The half wave rectifier has a very high ripple factor of about 1.2, which means it is too away from being categorized as a DC wave. Then the full wave centre tapped rectifier has a ripple factor of around 0.5, which is much closer to a DC wave than the half wave rectifier. Finally, there is a full wave bridge rectifier, which has a ripple factor of around 0.53. The final rectifier is a full wave bridge rectifier with a filter capacitor, resulting in an output wave that is more nearest to a DC wave with a ripple factor of 0.25. This is the primary difference between all of these rectifiers. Other difference is that half wave and full wave centre tapped rectifiers produce an output voltage of around 10V, but full wave bridge rectifiers with and without filters provide an output voltage of about 22V.
2. Isolation in a transformer refers to the electrical separation between the primary (input) and secondary (output) windings. This gap prevents direct electrical connections between the two sides, allowing energy to be transported between voltage levels without physical contact. Isolation ensures safety by preventing current from travelling straight from the input to the output, which could cause electrical shocks or damage to connected items. Isolation just means staying away from ground loops. A transformer is added to stop ground loops and quiet down the noise. The transformer does this by adding galvanic separation. This means that there is no DC path between the supply and the oscilloscope. This means that the main supply's ground can't connect with a component or scope's ground, which stops ground loops. The secondary coil is not linked to the main ground in any way, so the supply is not linked to the main source ground in any way.

Understood from: <https://www.iqsdirectory.com/articles/electric-transformer/isolation-transformers.html>