Msc Intro to AI 2020

a./i./ The objective function is not adequate for dealing with the constraint. It doesn't set a limit of W for the maximum weight, but instead just prioritises the products with greatest p-w delta. BUT as there is no way of limiting the weight, it will take all products currently.

ii./ Assuming the design variable has no limit to number of product, the current objective function would return [1,1,1] for the vector of V: values, taking all three products resulting in unfeasible solution of weight 10. The objective value for this solution is (10+5+20) - (3+3+4) = 25. A feasible (and optimal) solution is [1,0,1]. This has a weight of 7. The objective value of this solution is 23.

b./i./ One advantage of k-NN is that its robust to outliers, as we don't factor in all datapoints when its deciding on a class or regression value, but instead only the nearest k-values.

A dissadvantage of k-NN is that we need to store all datapoints in memory which can be prohibitive for large datasets.

Another dissadvantage of KNN is that inference can be computationally prohibitive on large datasets and high dimensional data.

ii./ Out of spec