Q2.1 As the model complexity increases, the training errors tend to decrease.

True

Q2.2 As the model complexity increases, the test errors tend to decrease.

False

As the model complexity increases, the model may over fit the training set, leading to a higher test error.

Q2.3 MAP is a non-parametric approach for parameter estimation.

False

MAP is parametric approach since we assume an underline distribution of the data.

Q2.4 K-NN is a non-parametric approach.

True

Q2.5 Histogram estimation is a non-parametric method.

True

Q2.6 Histogram estimation requires no human-set parameters.

False

During the histogram estimation, we need to set several hyper-parameters such as bin width and starting position of first bin. These hyper-parameters are human-set parameters.

Q2.7 PCA aims to maximize the reconstruction errors by projecting higher-dimension data to a lower-dimension ones.

False

PCA aims to minimize the reconstruction errors.

Q2.8 PCA can be treated as a subspece-selection approach.

True

Q2.9 1-NN and 3-NN always yield the same result.

False

It depends on the distribution of data.