IBM alignment models are a sequence of increasingly complex models used in statistical machine translation to train a translation model and an alignment model.

1. Lexical Translation: We count the probability of the sentence pair occuring in source and target language. So we define maximum likelihood estimation(MLE) for the word pair for each alignment mapping. The summation of all the alignment mappings gives the total probability.
2. Additional Positional Alignment: We add additional arguments for maintaining positional structure in both source and target language. We can also use HMM models for it.
3. Fertility Model: Some words in the either source or target language needs to be dropped or one or more words must be added. So we define a parameter which takes care of it.
4. Relative Distortion Model: Some words are independent while other move in the group or class.
5. Deficiency problem is solved by the 5th model.