EE706 Make up

Q1. a) Consider the following three video coding methods: directly coding a frame; coding the difference between every two frames; performing motion estimation between every two frames and coding the motion compensation error image. Recall that the bitrate required to achieve a given distortion is proportional to the variance of the signal to be coded. Take two adjacent video frames from a sequence, calculate and compare the variances of (a) a frame directly, (b) the direct difference between two frames, (c) the motion compensation error image. Based on your results, comment on the three coding schemes.
b) Apply DCT coding in each of the above 3 techniques. Determine the bitrate as a function of the quantization parameter.

Q2. Imagine a diogonal line of one pel width. How does the representation of this line change if we define an object using pels with four or eight neighbors? What is the advantage of hexagonal grid of pels?