Q2.1
Since we are projecting a three-dimensional structure, we need
Three × three transformation matrix.
We need at least four correspondences on each input we have used function
cv2.getPerspective().
We have used **cv2.warpPerspective** with this three × 3 matrix to obtain the transform.
Selecting at least 4 points doesn't always lead to a good result.
We have to choose the corresponding points in both images.
We need to select the corresponding 6-7 points at most minor
for good mosaicing and apply. But, picking four correspondences in two impressions does not always lead
to good mosaicing, so if we increase the correspondences count to 6 or 7, the result improves.

Q2.2
Possibilities of output changing and remaining same when image I2 is taken as a reference image, Then, image I2 will just be copied inside the resultant frame, and image I1 will be transformed inside this result image,
As we know that image I1 will go to that side where there is an overlap,
and if I2 is kept on the right side and overlap is also on the right side then we will see that overlapping happening inside the resultant image and vice versa for the left side.
Possibility of the resultant image remaining the same.
I.e. let image I1 image be large and I2 is small such that most of the part of the image I2 is present inside the image I1. Then on performing the transformation over image I1, we will get the same image.

Q2.3
It will not matter if we take image J1 as reference or image J2 as a reference, the overlapping common portion will be all the same,
The part which is not added will not be the same,
So either 10-20 and 85-95 will overlap in case I (J1 reference), or 85-95 will be overlapped with 10-20 (J2 reference).
The resultant will lead to the same size.

Q2.4
cv.getPerspective()
Stretched perspective image is taken from a different angle
Perspective transform can be generalized to affine transform, a combination of scaling and translation.
The transformation is affine such that the transformed point set becomes centered at the origin (usually the centroid) and scaled.

Q2.5
Reference (Hartley algorithm)
The relationship between the H and Hn :
Let thescaling or/and translation transformation given as , $x' = Tx$
The transformation matrix pair can be given as (T, T') , whereas T' is normalised transform,
Let (y', y) be the transformed and original normalised image .
Therefore $y' = T'y$
We can compute the estimated Homography H: $y = Hx$
We can compute the estimated Homography H: $y' = H_n x'$
Therefore using above equations we can write ,: $H = T' H_n T$

Q2.6
To differentiate between two we can use RMS deviation
We can use the RMS difference between the two transformed images .
Reference

Q3.1.1
N is controlled adaptively in every iteration by using following formula
$N = [log(1 - p)] / log(1 - (1 - eps)^S)$

Where S = no. of poits in sample is 4
p = desired prob that we have good sample (inlier) = 0.99
eps = 0.5 prob of pt being outlier

Q3.1.3
We use the hartley algorithm we chose t = sqrt(5.89)*sigma
The assumption is that the error gaussian sampled with sigma =3