Q1 and Q2 are in the Q1.m and Q2.m file

# Q3

(a) detects edges along -45° → (3)

(b) detects edges along 45° → (6)

(c) detects horizontal edges → (1)

(d) detects vertical edges → (2)

(e) is the variant Laplacian filter, which detects edges of all directions → (5)

(f) is the average filter, which will produce a blurred version of the image → (4)

# Q4

(a) The low-pass filter will blur the edges. As a result, the edge of the ring is thicker in the right figure instead of a thin bright boundary, and the whole ring looks like solid due to the averaging effect. It is very bright is that the changes near the ring is much sharper than any other area in the figure. Therefore, the ring is very bright and solid in the right figure.

(b) When filtering in frequency domain, operations are done with the help of Fourier Transform. When filtering out or preserving some frequency components, the results will not be changed by the order. Therefore, there is no difference when the filtering process is reversed.