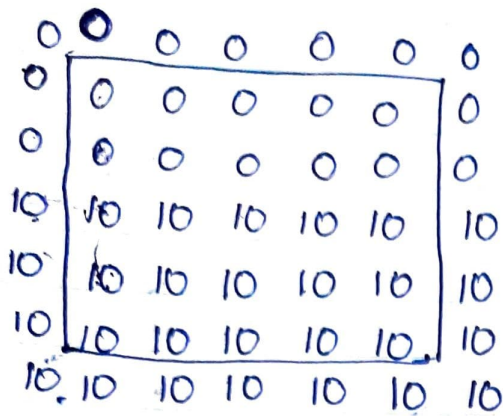


Q7

1

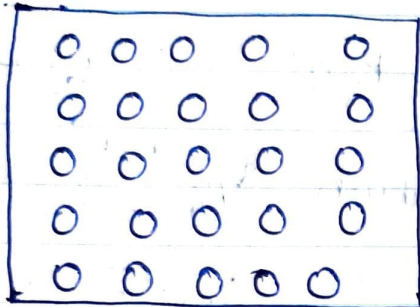


Sobelx

$$\begin{bmatrix} -1 & 0 & 1 \\ -2 & 0 & 2 \\ -1 & 0 & 1 \end{bmatrix}$$

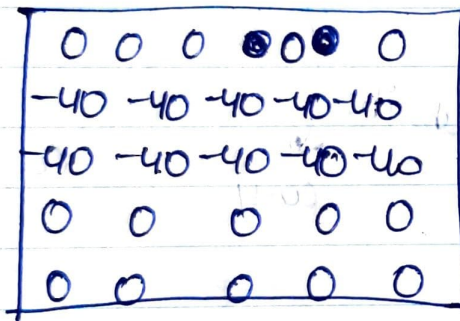
convoluted

$$\begin{bmatrix} 1 & 0 & -1 \\ 2 & 0 & -2 \\ 1 & 0 & -1 \end{bmatrix}$$



Sobel y

$$\begin{bmatrix} -1 & -2 & -1 \\ 0 & 0 & 0 \\ 1 & 2 & 1 \end{bmatrix}$$



convoluted

$$\begin{bmatrix} 1 & 2 & 1 \\ 0 & 0 & 0 \\ -1 & -2 & -1 \end{bmatrix}$$

detects horizontal edges

②

0	0	0	0	0	10	10
0	0	0	0	0	10	10
0	0	0	0	10	10	10
0	0	0	10	10	10	10
0	0	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10

Sobel x

0	0	0	-40	-30
0	0	-30	-30	-10
0	-30	-30	-10	0
-30	-30	-10	0	0
-10	-10	0	0	0

Sobel y

0	0	0	-20	-10
0	0	-30	-30	-10
0	-30	-30	-10	0
-40	-30	-10	0	0
-30	-10	0	0	0

③

0	0	0	10	10	10	10
0	0	0	10	10	10	10
0	0	0	10	10	10	10
0	0	0	10	10	10	10
0	0	0	10	10	10	10
0	0	0	10	10	10	10

Sobel x

0	-40	-40	0	0
0	-40	-40	0	0
0	-40	-40	0	0
0	-40	-40	10	0
0	-40	-40	0	10

Sobel y

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

Detects
vertical
edges

Q8

0	0	0	0	0	10	10
0	0	0	0	0	10	10
0	0	0	0	10	10	10
0	0	0	10	10	10	10
0	0	10	10	10	10	10
10	10	10	10	10	10	10
10	10	10	10	10	10	10

Kernel 1

0	1	0
1	-4	1
0	1	0

convolve

0	1	0
1	-4	1
0	1	0

0	0	0	+20	-10
0	0	20	-20	0
0	20	-20	0	0
20	-20	0	0	0
-20	0	0	0	0

Kernel 2

convolve

1	1	1	1	1
1	-8	1	1	1
1	1	1	1	1

0	0	10	40	-30
0	10	30	-30	-10
10	30	-30	-10	0
40	-30	-10	0	0
-20	+10	0	0	0