Practice Questions on manually calculating the parameters of a CNN

$$\text{output width} = \frac{W - F_w + 2P}{S_w} + 1$$

$$\text{output height} = \frac{H - F_h + 2P}{S_h} + 1$$

Q1

Sr	Layer
1	Input Image (150x150x3)
2	Conv Layer (3x3x32), strides=1, pad=same
3	Max Pooling (2x2), strides=2
4	Conv Layer (3x3x64), strides=1, pad=same
5	Max Pooling (2x2), strides=2
6	Conv Layer (3x3x128), strides=1, pad=same
7	Max Pooling (2x2), strides=2
8	Fully Connected 64
9	Output Layer 1

Kernel Size	Input Size	No. of Kernels	Calculations	Output Size	Parameters
3×3	150×150×3	32	Weights: 3×3×3 = 27 27×32 = 864 Bias: 1×32 = 32 Total = 864+32	150×150×32	896
2×2	150×150×32			75×75×32	
3×3	75×75×32	64	Weights: 3×3×32 = 288 288×64 = 18432 Bias: 1×64 = 64 Total = 18432+64	75×75×64	18496
2×2	75×75×64			37×37×64	
3×3	37×37×64	128	Weights: 3×3×64 = 576 576×128 = 73728 Bias: 1×128 = 128 Total = 73728+128	37×37×128	73856
2×2	37×37×128			18×18×128	
			18×18×128 = 41472	41472	
			Weights: 64×41472 = 2654208 Bias: 64×1 = 64 Total: 2654208+64	64	2654272
			Weights: 1×64 = 64 Bias: 1×1 = 1 Total: 64+1	1	65
Total					2747585

Q2

Sr	Layer
1	Input Image (150x150x3)
2	Conv Layer (3x3x25), strides=2
3	Max Pooling (2x2), strides=2
4	Conv Layer (3x3x35), strides=2
5	Max Pooling (2x2), strides=2
6	Conv Layer (3x3x50), strides=1
7	Max Pooling (2x2), strides=2
8	Fully Connected 1024
9	Output Layer 100

Q3

Sr	Layer
1	Input Image (224x224x3)
2	Conv Layer (7x7x32), strides=4
3	Max Pooling (3x3), strides=2
4	Conv Layer (3x3x64), strides=1
5	Max Pooling (3x3), strides=2
6	Conv Layer (3x3x128), strides=1
7	Max Pooling (3x3), strides=2
8	Fully Connected 512
9	Output Layer 100

Q4

Sr	Layer
1	Input Image (e.g. 224 x 224 x 3)
2	Convolutional Layer (11 x 11 x 64), stride=2
3	Max Pooling Layer (3 x 3), stride=2
4	Convolutional Layer (5 x 5 x 128), pad=2
5	Max Pooling Layer (3 x 3), stride=2
6	Convolutional Layer (3 x 3 x 256), pad=1
7	Convolutional Layer (3 x 3 x 256), pad=1
8	Convolutional Layer (3 x 3 x 512), pad=1
9	Max Pooling Layer (3 x 3), stride=2
10	Fully Connected 2048
11	Fully Connected 1024
12	Output Layer

Q5

Sr	Layer
1	Input Image (e.g. 224 x 224 x 3)
2	Convolutional Layer (7 x 7 x 32), stride=2
3	Max Pooling Layer (2 x 2), stride=2
4	Convolutional Layer (5 x 5 x 32), pad=2
5	Max Pooling Layer (2 x 2), stride=2
6	Convolutional Layer (3 x 3 x 32), pad=1
7	Max Pooling Layer (2 x 2), stride=2
8	Convolutional Layer (3 x 3 x 32), pad=1
9	Max Pooling Layer (2 x 2), stride=2
10	Fully Connected 1024
11	Output Layer 10