Q.1 Given,

28 × 28 × 192

28

28   192

option 1 ⇒   5×5 filter with 32 filters
                         stride 1
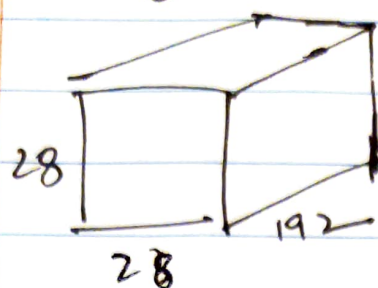
5 × 5 × 32

5

5   32

result
⇒

28
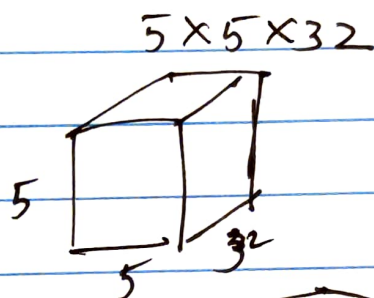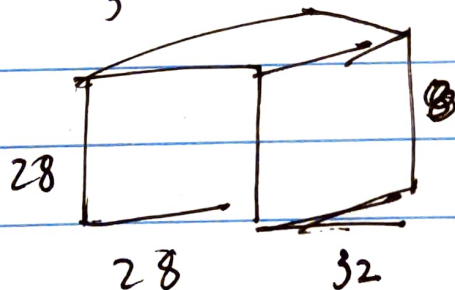
28   32

for option1,
computation can be calculated as
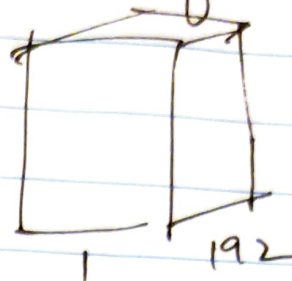
$$\Rightarrow (28 \times 28 \times 32 \quad \times 5 \times 5 \times 192) \times 2$$
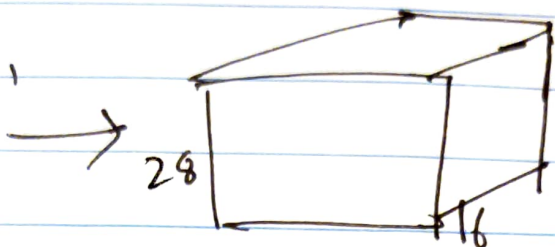
≈ 240 M computations
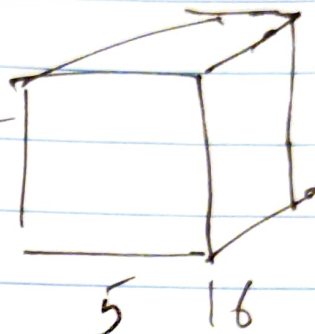
ii) option -2
using a 1×1 filter before 5×5 filter

28
28   192

×1

1   192

step1 →

28
16

×5

5   16
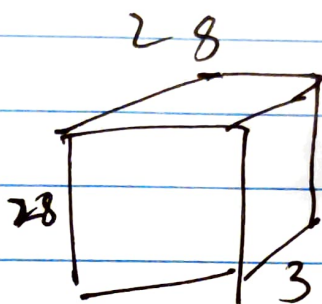
step2 →

28
28   3

28

no. of computations:

step1   = $28 \times 28 \times 16 \times 1 \times 1 \times 192 \times 2$
         $\approx 4.9 M$

step2   = $28 \times 28 \times 32 \times 5 \times 5 \times 16 \times 2$
         $= 20 M$

total computations $\approx 25 M$

∴ We can see that option2 is less
computationally intense.