Exercice 1

a)

| 1 | 3 | -2 | 0 | 2 | -1 | 3 | 1 | 2 |

| 2 | 1 | -1 |

| 2 |

S = stride P = padding

$S = 1$ $P = 0$: | 7 | 4 | -6 | 3 | 0 | 0 | 5 | , with bias → | 9 | 6 | -4 | 5 | 2 | 2 | 7 |

$S = 2$ $P = 0$: | 7 | -6 | 0 | 5 | , with bias → | 9 | -4 | 2 | 7 |

$S = 4$ $P = 0$: | 7 | 1 | with bias → | 9 | 3 |

$S = 1$ $P = 1$: | -2 | 7 | 4 | -6 | 3 | 0 | 0 | 5 | 4 | with bias → | 0 | 9 | 6 | -4 | 5 | 2 | 2 | 7 | 6 |

$S = 4$ $P = 1$: | -2 | 3 | 4 | with bias → | 0 | 5 | 6 |

b)
- Activation maps (= output image) = $3 \cdot 3 \cdot 2 = 18$
- $S = 1$ $P = 0$: output shape 2×2
- $S = 2$ $P = 0$: output shape 1×1
- Keep same size : $P = 1$ $S = 1$ Filter: 3×3
- $S = 1$ $P = 0$ outputs is in the notebook file name : exereice1B.ipynb