

Consider a two input (i.e.,  $x_1$  and  $x_2$  neuron with an activation  $\phi(z)$ .

Consider  $\{-1, +1\}$  logic, and  $\phi(z) = +1$  if  $\mathbf{w}^T \mathbf{x} \geq 1$  else -1.

For what values of  $w_1$  and  $w_2$ , the neuron will act as AND?

(A) **[Ans]**  $w_1 = 1$  and  $w_2 = 1$

(B)  $w_1 = -1$  and  $w_2 = -1$

(C) **[Ans]**  $w_1 = 2$  and  $w_2 = 2$

(D)  $w_1 = -2$  and  $w_2 = -2$

(E) None of the Above

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For what values of  $w_1$  and  $w_2$ , the neuron will act as OR?

(A)  $w_1 = 1$  and  $w_2 = 1$

(B)  $w_1 = -1$  and  $w_2 = -1$

(C)  $w_1 = 2$  and  $w_2 = 2$

(D)  $w_1 = -2$  and  $w_2 = -2$

(E) **[Ans]** None of the Above

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For what values of  $w_1$  and  $w_2$ , the neuron will act as NAND?

(A)  $w_1 = 1$  and  $w_2 = 1$

(B)  $w_1 = -1$  and  $w_2 = -1$

(C)  $w_1 = 2$  and  $w_2 = 2$

(D)  $w_1 = -2$  and  $w_2 = -2$

(E) **[Ans]** None of the Above

Consider a two input (i.e.,  $x_1$  and  $x_2$  neuron with an activation  $\phi(z)$ .

Consider  $\{-1, +1\}$  logic, and  $\phi(z) = +1$  if  $\mathbf{w}^T \mathbf{x} \geq -1$  else -1

For what values of  $w_1$  and  $w_2$ , the neuron will act as AND?

(A)  $w_1 = 1$  and  $w_2 = 1$

(B)  $w_1 = -1$  and  $w_2 = -1$

(C)  $w_1 = 2$  and  $w_2 = 2$

(D)  $w_1 = -2$  and  $w_2 = -2$

(E) **[Ans]** None of the Above

Consider a two input (i.e.,  $x_1$  and  $x_2$  neuron with an activation  $\phi(z)$ .

Consider  $\{0, +1\}$  logic, and  $\phi(z) = +1$  if  $\mathbf{w}^T \mathbf{x} \geq 1$  else 0

For what values of  $w_1$  and  $w_2$ , the neuron will act as AND?

(A)  $w_1 = 1$  and  $w_2 = 1$

(B)  $w_1 = -1$  and  $w_2 = -1$

(C)  $w_1 = 2$  and  $w_2 = 2$

(D)  $w_1 = -2$  and  $w_2 = -2$

(E) **[Ans]** None of the Above