

# Gate Assignment 1

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Download latex-tikz codes from

<https://github.com/KBVijayVarma/EE3900/tree/main/GateAssignment1>

## PROBLEM (VECTORS Q2.14)

Two systems with impulse responses  $h_1(t)$  and  $h_2(t)$  are connected in cascade. Then the overall impulse response of the cascaded system is given by

- 1) product of  $h_1(t)$  and  $h_2(t)$
- 2) sum of  $h_1(t)$  and  $h_2(t)$
- 3) convolution of  $h_1(t)$  and  $h_2(t)$
- 4) subtraction of  $h_2(t)$  from  $h_1(t)$

## SOLUTION

Given Two systems with impulse responses  $h_1(t)$  and  $h_2(t)$  are connected in cascade.

We know that "when two systems are cascaded, then the resultant response is the convolution of the individual responses".

Hence, the overall impulse response of the cascaded system is given by convolution of  $h_1(t)$  and  $h_2(t)$ .

Therefore, **Option 3** is Correct.