Given:

Initial Delta ($\Delta_{initial}$) = 0.60
Gamma (Γ) = 0.05
Initial stock price ($S_{initial}$) = $50
New stock price (S_{new}) = $55
Number of call options = 100
Contract size = 100 shares per option (Assume)

Step 1: Calculate the New Delta

Calculate the change in stock price (ΔS):
$\Delta S = S_{new} - S_{initial} = 55 - 50 = 5$

Calculate the change in Delta ($\Delta\Delta$):
$\Delta\Delta = \Gamma \times \Delta S = 0.05 \times 5 = 0.25$

Calculate the new Delta (Δ_{new}):
$\Delta_{new} = \Delta_{initial} + \Delta\Delta = 0.60 + 0.25 = 0.85$

Step 2: Determine the Change in Delta and Adjust the Position

Calculate the initial position Delta ($\Delta_{position, initial}$):
$\Delta_{position, initial} = \Delta_{initial} \times$ number of options $\times$ contract size
$\Delta_{position, initial} = 0.60 \times 100 \times 100 = 6000$

Calculate the new position Delta ($\Delta_{position, new}$):
$\Delta_{position, new} = \Delta_{new} \times$ number of options $\times$ contract size
$\Delta_{position, new} = 0.85 \times 100 \times 100 = 8500$

Calculate the change in position Delta (Δ_{change}):
$\Delta_{change} = \Delta_{position, new} - \Delta_{position, initial}$

Δchange = 8500 - 6000 = 2500

To neutralize this Delta change, you need to sell 2500 shares of the underlying stock.

Result

The new Delta of options is 0.85.
We should sell 2500 shares of the underlying stock to remain delta-neutral.