Q5

$$y''(t) + 0.5\, y'(t) + 0.15\, y(t) = x(t)$$

$$y'(0) = 1 \qquad \& \qquad y(0) = 1 \qquad x(t) = u(t)$$

$$y''(0) + 0.5\, y'(0) + 0.15\, y(0) = u(t)$$

$$y''(0) + 0.5 + 0.15 = u(t)$$

$$y''(0) + 0.65 = u(t)$$

$$y''(0) = u(t) - 0.65$$

$$\frac{d^2}{dt^2} y(0) = u(t) - 0.65$$