

Part

3a)

$$f_c = \frac{1}{2\pi RC}$$

$$RC = \frac{1}{2\pi \underbrace{(100)}_{f_c}}$$

Assuming  $C = 15 \times 10^{-6} \text{ F}$

$$R = \frac{1}{2\pi (100)(15 \times 10^{-6})}$$

$$\begin{aligned} R &= 106.1 \, \Omega \\ C &= 15 \times 10^{-6} \text{ F} \end{aligned}$$

RC pole is

$$p = -\frac{1}{RC}$$

Unit impulse response is...

$$H(t) = \frac{1}{(106.1)(15 \times 10^{-6})} e^{-\frac{t}{(106.1)(15 \times 10^{-6})}}$$