

ECEN 214 502

Lab Number :6

March 31, 2023

Part 1:

$$a) T = (K)(C)$$

$$\rightarrow (100m)(10\mu F) = 1$$

Now,

$$T = \frac{R_2}{R_1 + R_2} = \frac{4.5}{5.1 + 4.5} = 4.69$$

$$\text{AND } F_0 = \frac{1}{2(1) \ln\left(\frac{1-4.69}{1+4.69}\right)} = \boxed{.492}$$

(b) Peak to Peak

$$2(.4.69)(5) = \boxed{4.69V}$$

(c) Root Mean Square

$$\text{first, } T_0 = \frac{1}{f} = \frac{1}{.492} = 2.03s$$

$$-(5) + [(-.492)(5) + 5]e^{-t/T}$$

$$= -5 + 7.46e^{-t}, \text{ and } 0 \leq t \leq 1.015s$$

$$V = \sqrt{\frac{1}{T_0} \int V^2 dv} = \sqrt{\int_0^{1.015} (-5 + 7.46e^{-t})^2 dt + \int_{1.015}^{2.03} (-5 + 7.46e^{-t})^2 dt}$$
$$= \boxed{2.559V}$$

Part 2:

