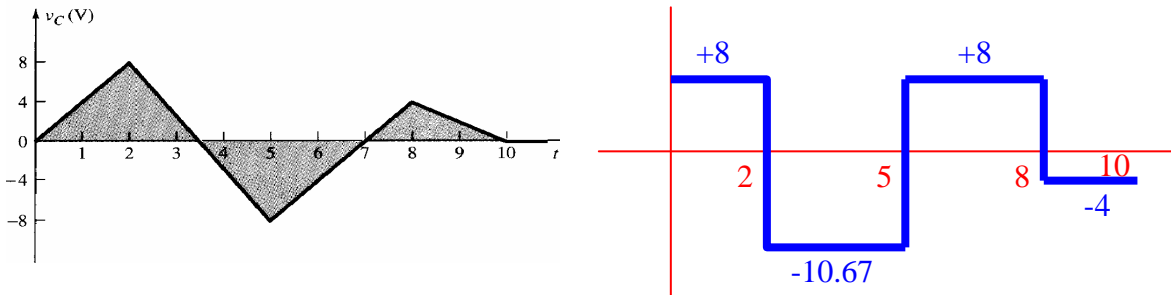


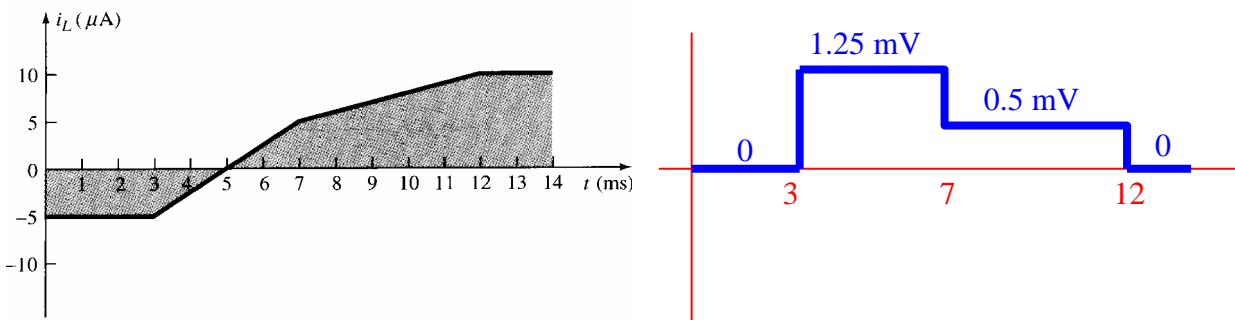
生機系電工學第六次隨堂測驗 2011/03/23

學號：_____ 姓名：_____

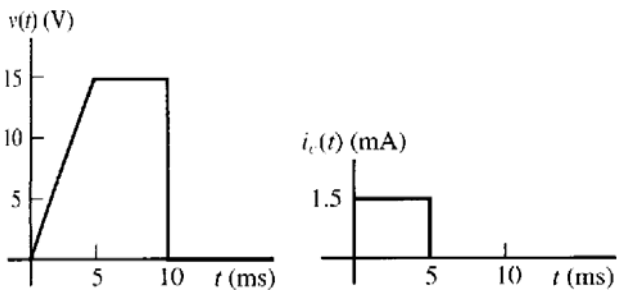
1. Determine the waveform for the current i_c of a $2\text{-}\mu\text{F}$ capacitor for the applied-voltage v_c .



2. Determine the wave form for the v_L of a 0.5-H inductor for the current i_L .



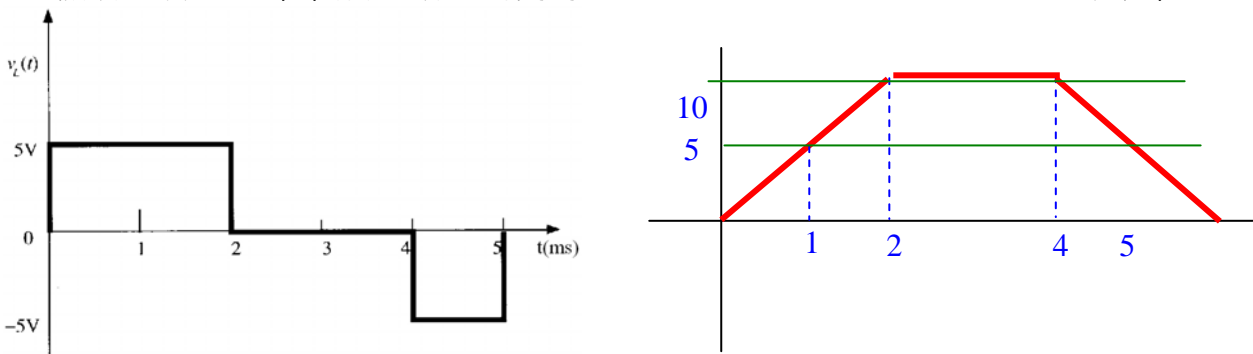
3. 圖示為跨越與流經電容 (capacitor) 之電壓與電流，求該電容之電容值 (capacitance)。8%



$$i_c = C \frac{dV_c}{dt}$$

$$1.5\text{mA} = C \frac{15 - 0\text{V}}{5\text{ms}} = 0.5\mu\text{F}$$

4. 圖示為跨越電感值為 1-mH 之電感 (inductor) 之電壓，畫出流經該電感之電流 $i_L(t)$ 。8% (假設 $i_L(0) = 0\text{ A}$) (請明確標示時間為 1 ms 、 2 ms 、 3 ms 、 4 ms 、 5 ms 之電流值)



$$V_L = L \frac{di_L}{dt}; t=0 \sim 2\text{ms} \quad 5\text{V} = 1\text{mH} \frac{10 - 0\text{A}}{2\text{ms}}; t=2 \sim 4\text{ms} \quad 0\text{V} = 1\text{mH} \frac{10 - 10\text{A}}{2\text{ms}}$$

$$t = 1\text{ms} \quad i_L = 5\text{A} \quad t = 2\text{ms} \quad i_L = 10\text{A} \quad t = 3\text{ms} \quad i_L = 10\text{A} \quad t = 4\text{ms} \quad i_L = 10\text{A} \quad t = 5\text{ms} \quad i_L = 5\text{A}$$