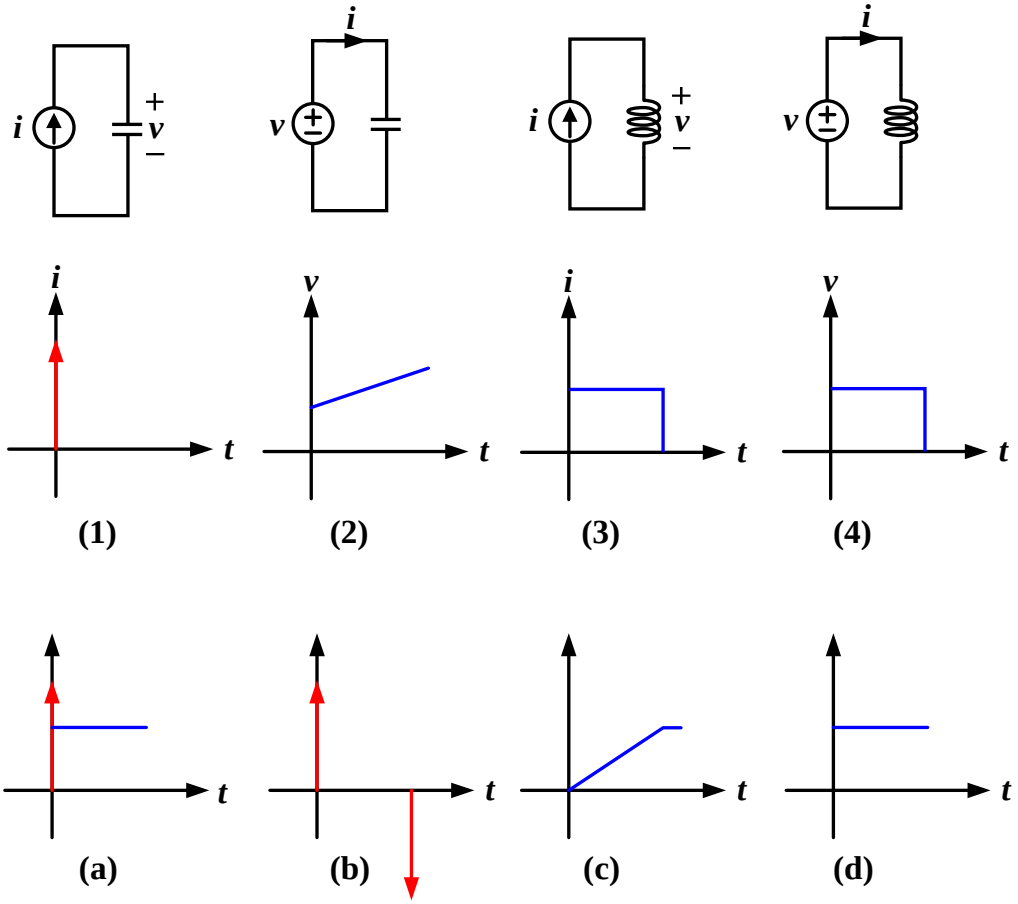
電路學(EE2210)第八次隨堂考

2015年5月13日
時間：10 分鐘
Close Book

學號：_____

姓名：_____

The following figures show four circuits, labeled "(1)" through "(4)", together with the waveform for the source in each circuit. The figures also show four branch-variable waveforms, labeled "(a)" through "(d)", that could correspond to branch currents *i* or branch voltages *v* labeled in circuits. Match the branch variable waveform (a to d) to the appropriate circuit and source waveform (1 to 4).



Solution:
(1) From the constitution law of capacitor, the current impulse will lead to a constant voltage through the inductor. It should be (d).

(2) By using the constitution law of capacitor, $C\frac{dv_C(t)}{dt}=i_L(t)$ and the imput voltage compose a step at $t=0$ and a constant ramp for $t>0$. It should be (a).

(3) The step input $u(t)$ will cause a voltage impulse of $v(t)=LI\delta(t)$. It should be (b).

(4) From the constitution law of inductor, we have $L\frac{di(t)}{dt}=Vu(t)-Vu(t-T)$. Thus, the current flow through the inductor will increase linearly up to VT/L. It should be (c).

(1) $\rightarrow$(d), (2) $\rightarrow$ (a), (3) $\rightarrow$ (b), (4) $\rightarrow$ (c).