امتحـــــــان التخلفـــــــات

Final EXAM 2014/2015 - Second Term

Course	Electric Circuit -2 (EPM1203)	Time Allowed	3 hours
	1st Year (Electrical)	Total Mark	125
Date	21 May, 2014	Number of pages	3

Answer ALL the following questions and problems:

The First question

The switch in the circuit in the figure has been in position "a" for a long time. At time t = 0, the switch is moved to position "b".

a) Find i_o (t) for $t \geq 0+$.

b) What percentage of the initial energy stored in the capacitor is dissipated in the 3 kΩ resistor at time t = 500 μs?
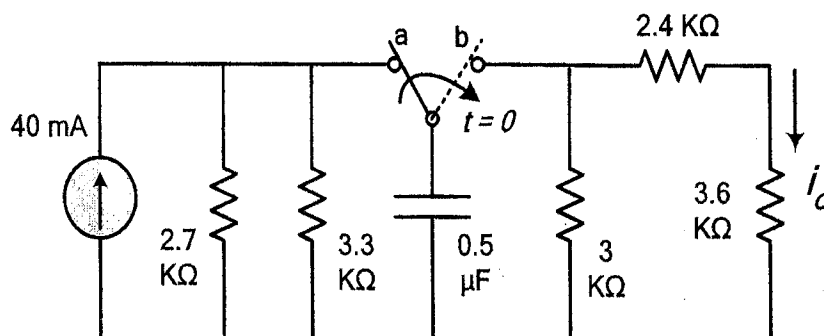
The Second Question

1. Write down the differential equation describing the step response of an RLC parallel circuit. With aid of mathematical relations and simple sketches, explain the effect of resistance on the nature of the response.

2. A critically-damped RLC circuit has a capacitor of 0.2 micro Farad with an initial voltage of 24 V and an inductor of 50 mH with zero initial current. The circuit is supplied from a current source of 20 mA.

   a) Find time expression of inductor current i_L for $t \geq 0$
   b) Plot i_L for a time range up to 1 ms

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