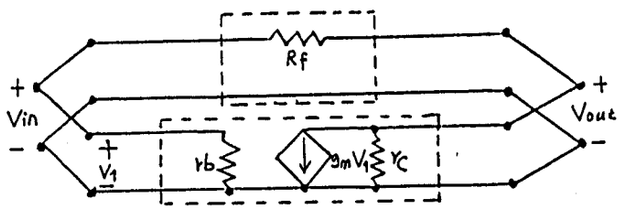
電机

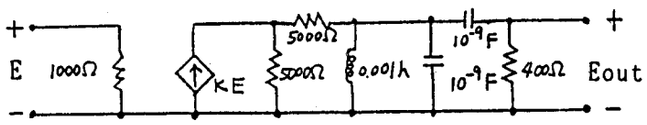
國立成功大學八十二學年度研究所碩士班入學考試(電路學試題) 共 1 頁 第 1 頁

1. Describe the physical meanings of the following terms: (5% each)
   (a) phasor (b) maximum power transfer theorem
   (c) quality factor (d) load line

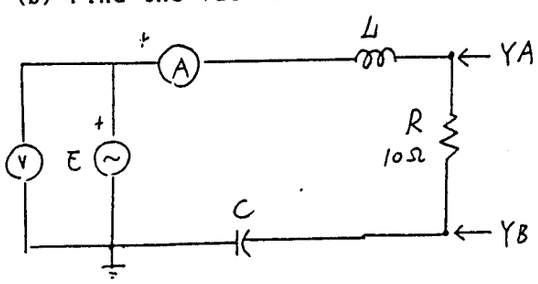
2. Using y-parameters, obtain the total circuit y-parameters for the circuits indicated by the dashed lines. Hint: first find the y-parameters of the two indicated two-port networks, then combine hem to obtain the total network y-parameters. (20%)



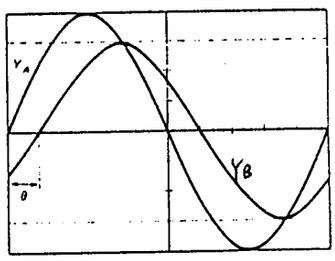
3. An oscillator circuit is shown. Determine the minimum value of K such that Eout = E. Also, find the frequency at which Eout = E. (20%)



4. The source in the RLC circuit shown in (a) has a frequency of 1 kHz, being the resonance frequency of this circuit. The oscillogram obtained with the scope connected as indicated is shown in (b). Here:
   YA: V/div =20 YB: V/div = unknown
   (a) Find YB(V/div) and the readings of the voltmeter and ammeter. (10%)
   (b) Find the values of L and C. (10%)

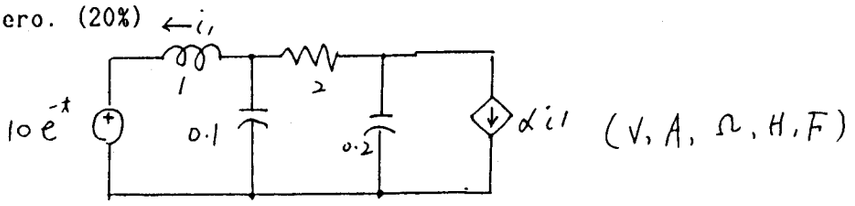


(a)



(b)

5. Obtained the standard matrix state equation for the circuit shown. The initial state is zero. (20%)



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