

# 淡江大學 101 學年度進修學士班轉學生招生考試試題

系別：電機工程學系三年級

科目：電子學

考試日期：7月18日(星期三) 第3節

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1. 20% The diode shown in Fig. 1 is with  $I_S = 2 \times 10^{-15}$  A. Calculate  $V_{D1}$  and  $I_X$  for  $V_X = 0.7$  V and 1.5V, respectively.

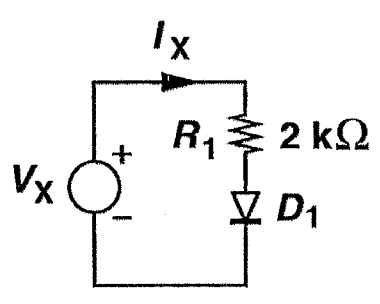


Fig. 1

2. 20% Assuming  $V_{in} = V_p \sin \omega t$ , plot the output wave form of the circuit shown in Fig. 2 for an initial condition of +0.5V across  $C_1$ . Assume  $V_p = 5$  V.

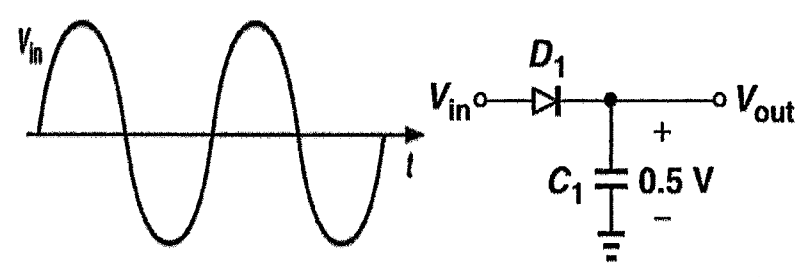


Fig. 2

3. 20% Calculate  $V_X$  in Fig. 3 if  $I_S = 2 \times 10^{-16}$  A.

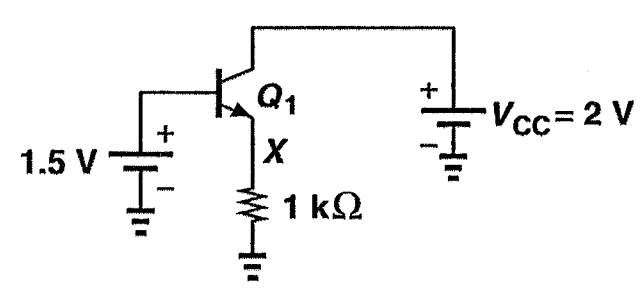


Fig. 3

4. 20% Draw the small signal circuit by using hybrid- $\pi$  model for the following BJT circuits.

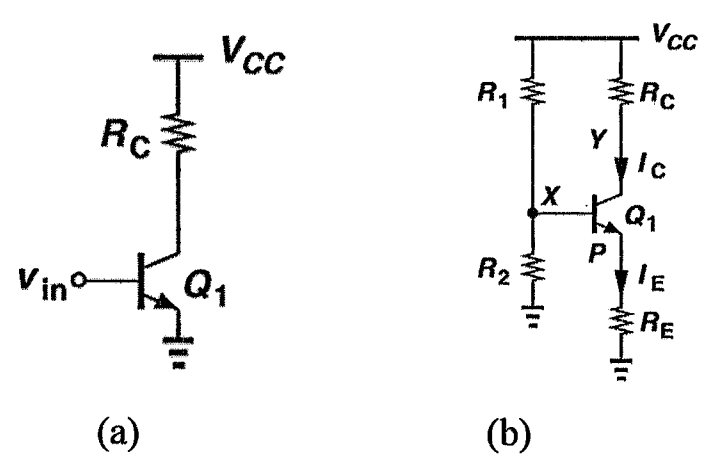


Fig. 4

本試題雙面印刷

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5. 20% Calculate  $v_{out}/v_{in}$  for the circuit shown in Fig. 5. Assume  $I_S = 8 \times 10^{-16} \text{ A}$ ,  $\beta = 100$ , and  $V_A = \infty$ . Also assume the capacitors are very large.

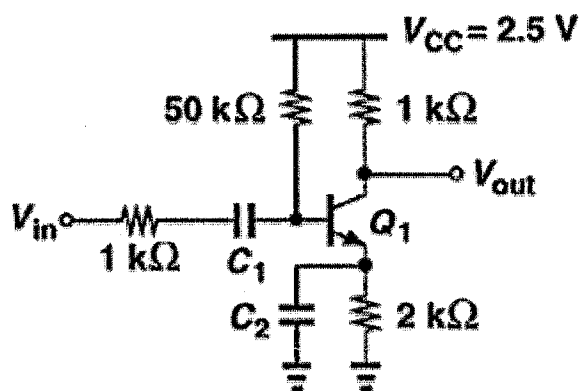


Fig. 5