

淡江大學 101 學年度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17日(星期二) 第1節

本試題共 5 大題， 2 頁

本試題雙面印刷

1. (20%)Figure 1 shows two diodes with reverse saturation currents of I_{S1} and I_{S2} placed in series. Calculate I_B , V_{D1} , and V_{D2} in terms of V_B , I_{S1} , and I_{S2} .

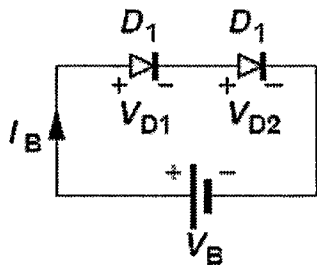


Fig. 1

2. (20%)As shown in fig.2, design a full-wave rectifier to deliver an average power of 2 W to a cellphone with a voltage of 3.6 V and a ripple of 0.2 V. If voltage ripple of V_{out} is smaller than 0.2V and f_{in} is equal to 60Hz. ($V_{D,on}=0.8V$)

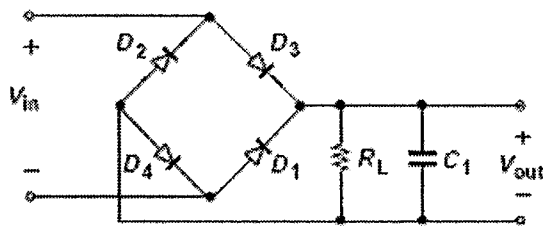


Fig. 2

3. (20%)In the circuit of Fig. 3, $I_S = 5 \times 10^{-17}$ A. Determine V_X for (a) $V_A = \infty$, and (b) $V_A = 5$ V.

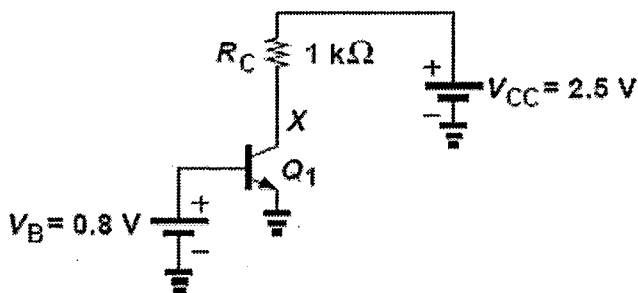


Fig. 3

4. (20%)As depicted in Fig. 4, (a) Compute the R_{in} , R_{out} and A_v of CE for $V_A = \infty$. (b) Compute the R_{in} and R_{out} of CE for $V_A \neq \infty$

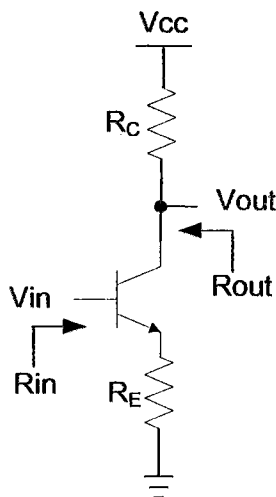


Fig.4

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5. (20%) As depicted in Fig. 5, (a) Compute the R_{in} , R_{out} and A_v of CB for $V_A = \infty$. (b) Compute the R_{in} and R_{out} of CB for $V_A \neq \infty$.

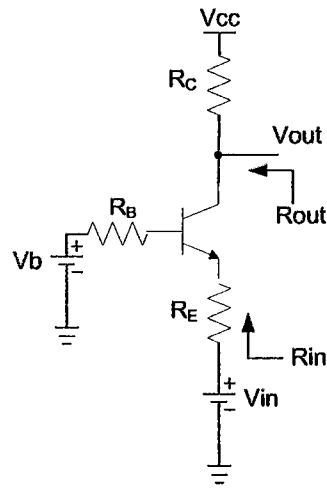


Fig. 5