RT 04

國立臺北科技大學 108 學年度碩士班招生考試

系所組別：1503 自動化科技研究所

第二節　電子學　試題（選考）

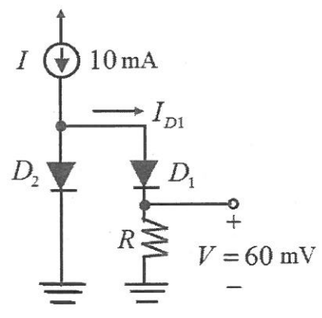
注意事項：

1. 本試題共五題，共 100 分。
2. 不必抄題，作答時請將試題題號及答案依照順序寫在答案卷上。
3. 全部答案均須在答案卷之答案欄內作答，否則不予計分。

1. (10%) For an ideal transconductance amplifier, which of the following statements is correct:

   (A) It has an infinitely high input resistance; (B) the output signal is voltage; (C) It has zero output resistance.

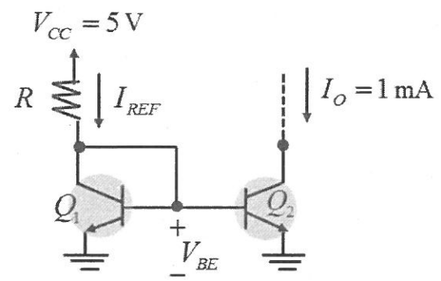
2. (25%) For the circuit shown below, both diodes are identical, conducting 10mA at 0.7V and 100mA at 0.8V. Find the value of R for which $V = 60\text{mV}$.



3. (10%) Which configuration of single-stage FET amplifiers normally acts as unity-gain current amplifier?

   (A) The common-gate amplifier; (B) the common-drain amplifier; (C) the common-source amplifier.

4. (30%) For the circuit shown below, suppose that $V_{BE} = 0.7\text{V}$ and $\beta = 100$, find the values of I_{REF} and R. (neglect the effect of output resistance)



5. (25%) For the circuit shown below, suppose that the diode has a voltage drop $V_D = 0.7\text{V}$, find the values of I_1 and V_O.