

Quiz05 Operational Amplifier

總分 80/100



NCTU EELAB Fall

區段分數 0/0

Class *



DEE222



DEE320

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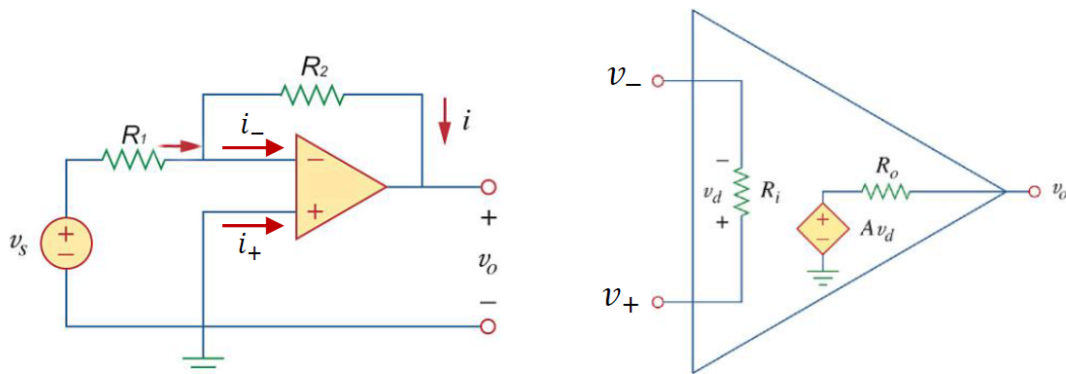
陳愉方

Q1. Please derive two important properties about operational amplifier according to the circuit characteristics of operational amplifier.

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Negative-feedback circuits & Ideal op-amp characteristics



Parameter	Idealized Characteristic
Open-loop gain	$A_{open-loop} \rightarrow \infty$
Input impedance	$R_i \rightarrow \infty$
Output impedance	$R_o \rightarrow 0$

Virtual short

✓ (1) Explain virtual short, i.e. $v_+ = v_- = 0$. Choose the most appropriate answer. *

20/20

HINT : Because of (a), so (b), then we get (c).

$$(w) i_+ \approx 0, i_- \approx 0$$

$$(x) v_d = v_+ - v_- = \lim_{A_{open-loop} \rightarrow \infty} \frac{v_o}{A_{open-loop}} = 0$$

$$(y) A_{open-loop} \rightarrow \infty$$

$$(z) v_+ = v_-$$

☐ (a, b, c) = (w, z, z)

☐ (a, b, c) = (v, x, z)

☐ (a, b, c) = (y, x, z)



☐ (a, b, c) = (z, w, z)

No input current



✓ (2) Explain why no current flows into the input terminals, i.e. $i_+ \approx i_- \approx 0$. Choose the most appropriate answer. *

HINT : Because of (a), so (b).

(w) $v_+ = v_-$

(x) $i_+ \approx 0, i_- \approx 0$

(y) $R_i \rightarrow \infty$

(z) $R_o \rightarrow 0$

☐ (a, b) = (w, x)

☒ (a, b) = (y, x)



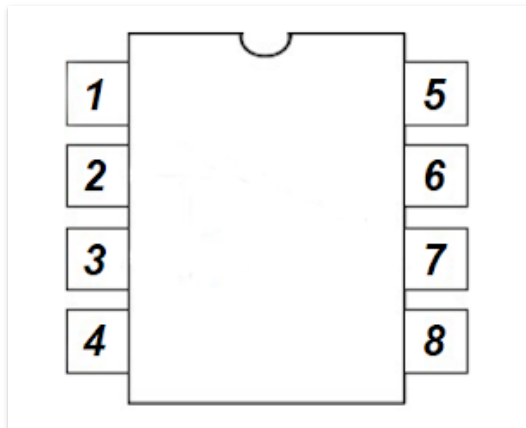
☐ (a, b) = (z, x)

Q2. Answer the following questions about ICs.

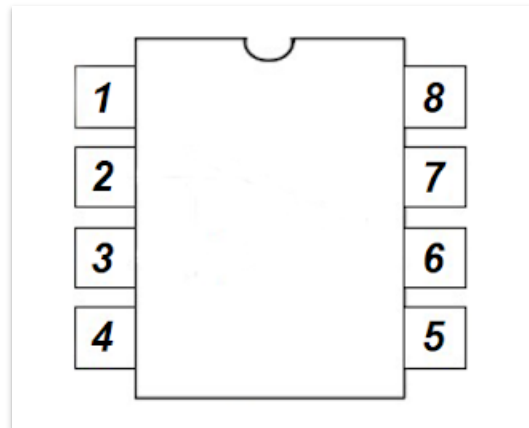
區段分數 30/30



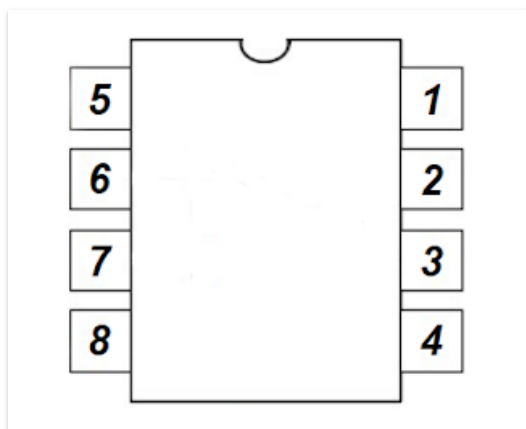
✓ (1) Look at the ICs below, please choose the correct order of 15/15 pin-out. *



☐ A



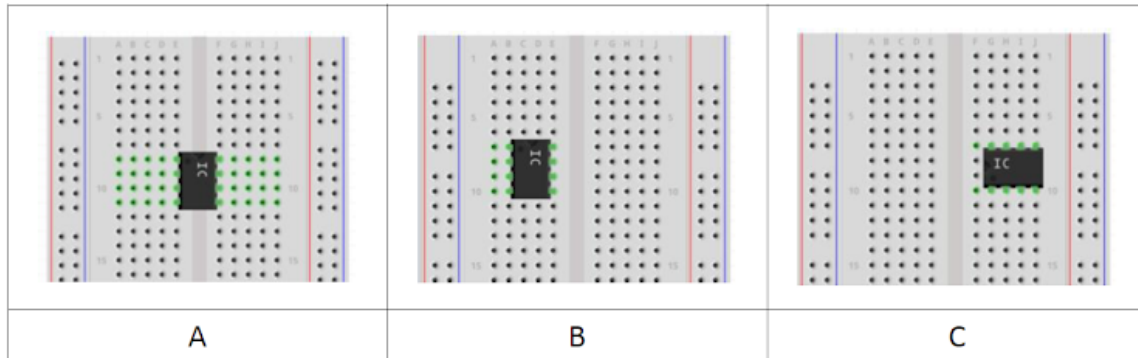
☒ B



☐ C

✓ (2) How would you place ICs on breadboard, choose the most appropriate way. *

15/15

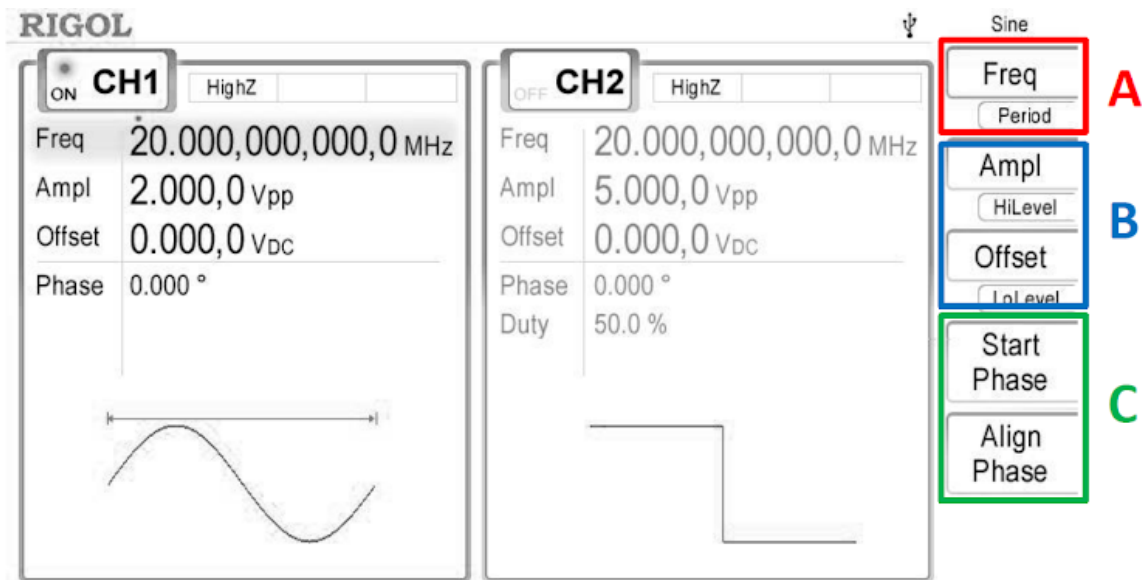
☒ A☐ B☐ C

Q3. In this lab, you have to use the RIGOL function generators alternately, according to the user interface shown below, answer the following questions.

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User interface of RIGOL function generator



✓ (1) If you want to align / adjust the two-channel signals' phases, which button(s) will you try. *

10/10

- ☐ A
- ☐ B
- ☒ C

✓

× (2) Following the previous question, choose appropriate expressions about buttons. *multi-choice *

0/20

- ☒ A : Setting or changing frequency or period of signals. ✓
- ☒ B : These buttons could be set by combinations (Ampl,Offset) or (HiLevel,LoLevel). ✓
- ☐ B : Parameters of (Ampl,Offset) will equal to (HiLevel,LoLevel).
- ☒ C : If phase difference is needed between CH1 and CH2, use "Start Phase." ✓
- ☒ C : "Align Phase" means setting "Start Phase" of two channels with the same phase. ✗

正確答案

- ☒ A : Setting or changing frequency or period of signals.
- ☒ B : These buttons could be set by combinations (Ampl,Offset) or (HiLevel,LoLevel).
- ☒ C : If phase difference is needed between CH1 and CH2, use "Start Phase."

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