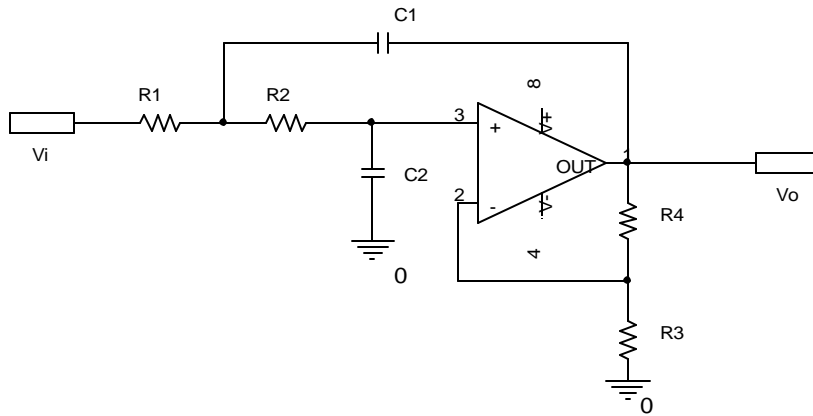


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(1) 2 LPF



- (a)
- (b)  $f_0 = 30 \text{ Hz}$       $Q = 0.707$   
 , equal component design
- (c) dc

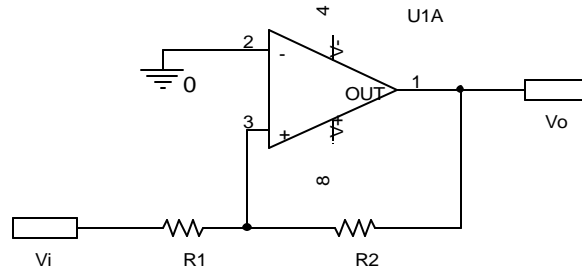
(2) dc offset 가 10 mV , op amp가

- (a) 100
- (b) 가  $10\sin(2\pi \times 100t)$  mV ,
- (c) dc 가 , 가
- 2 , 3 dB
- (d) (c) 가 가? ,  
 가?

(3) (GBP) 1 MHz ,  $a_0$ 가 100dB ,  $f_a$ 가 10Hz op amp가

- (a)  $|a|_{\text{dB}}$
- (b) 100 3 dB  $f_A$ 가 1 kHz  
 , 100 Hz loop gain  
 가?
- (c) 1000 , 3 dB  $f_A$  가 가?

- (4) Op amp  $\pm 10\text{ V}$  가  
 $R_1 = 1\text{ k}\Omega$ ,  $R_2 = 4\text{ k}\Omega$ .



- (a) VTC (voltage transfer curve)  
 (b)  $v_i$  가  $5\sin(2\pi \times 10^3 t)$  V

- (5) DAC ADC  
 (a) R-2R ladder 4-bit DAC  
 $V_{REF} = 5\text{ V}$ ,  $V_{FSR} = 10\text{ V}$  가  
 , DAC LSB V  
 (b) 8-bit successive approximation ADC 0 – 10 V  
 $3.526\text{ V}$ , ADC  
 , ADC V