

Analog Test

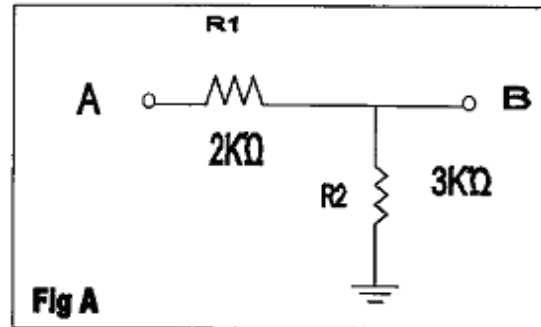
Name

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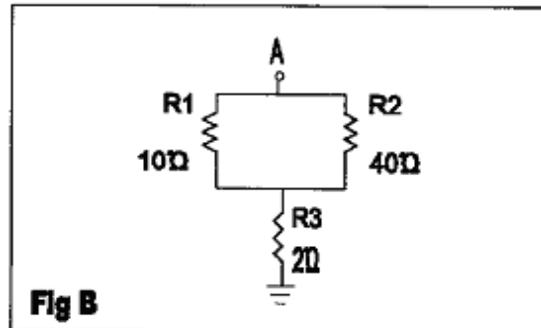
Analog Test

Show All Work

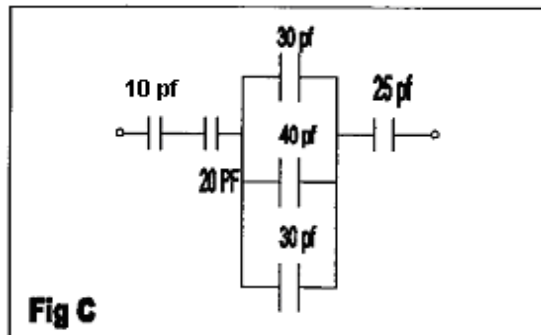
1. With a +5 volt potential applied to 'A', what current flows through R1 and R2? (Fig A)
2. With the same voltage applied to 'A', what is the voltage at 'B'? (Fig A) (Hint: Use voltage divider formula)



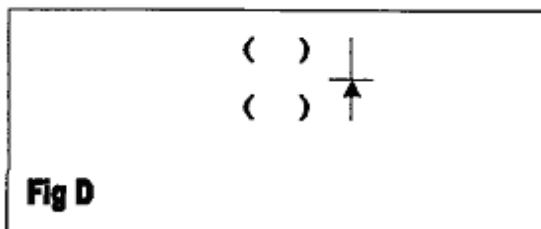
- 3a. With +10 volts applied to point 'A', what is the total current that flows between 'A' and ground? (Fig B)
- b. What is the current through R2? (Fig B) (Hint: Use current divider formula)



4. What is the total capacitance in the diagram at right? (Fig C)



5. Fill in the polarities to make the diode conduct. (Fig D)



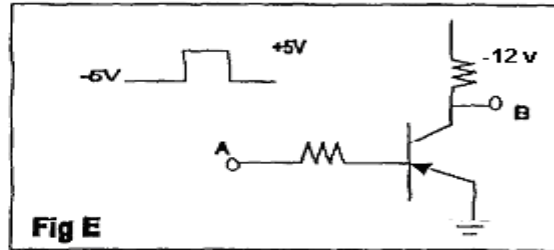
6. Why do Zener Diodes make good voltage regulators?

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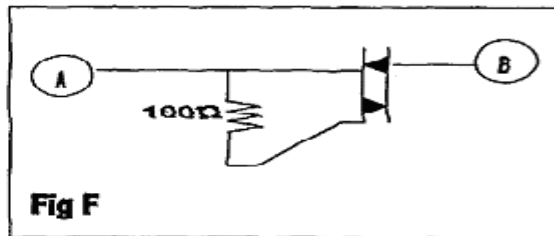
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- 7a. The signal shown applied to 'A' in the diagram at right turns the transistor fully on and off. What is the voltage at 'B' when the transistor is on? (Fig E)
- _____



- b. What is the voltage at 'B' when the transistor is off?
- _____

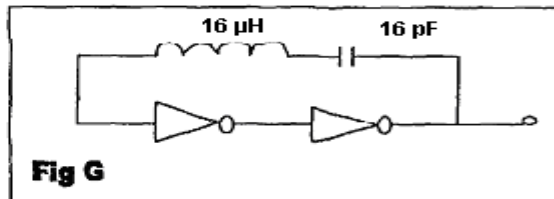
8. The -, + Triac at the right has a 115 VAC signal applied to input 'A'. Draw the output at 'B' for one AC cycle applied to 'A'. (Fig F)



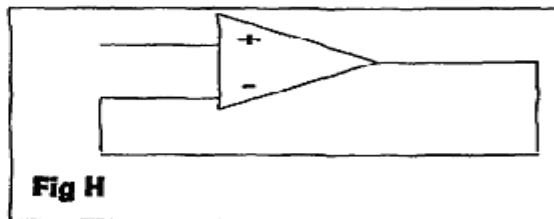
9. Assuming ideal components, what is the approximate frequency of the oscillator at right? (Fig G)

$$16 \mu\text{H} = 16 \times 10^{-6} \text{ H}$$

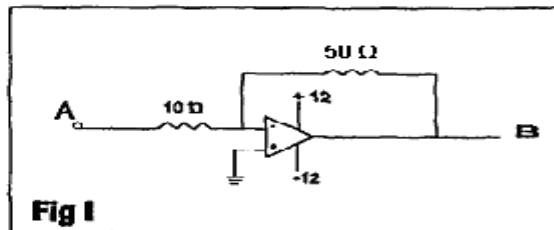
$$16 \text{ pF} = 16 \times 10^{-12} \text{ F}$$



10. What is the gain (A) of the Op-AMP at right? (Fig H)



11. What is the voltage at 'B' if -1 volt is applied to 'A'? (Fig I) (Hint: Use inverting Op-AMP formula)



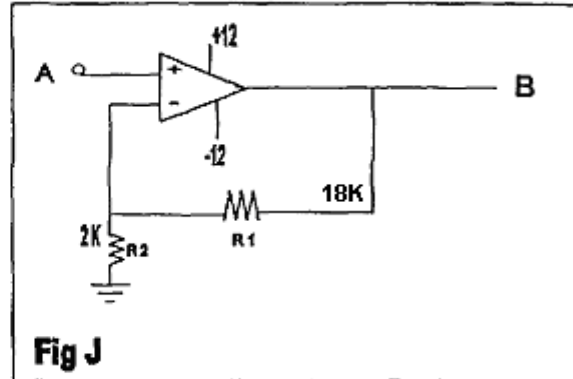
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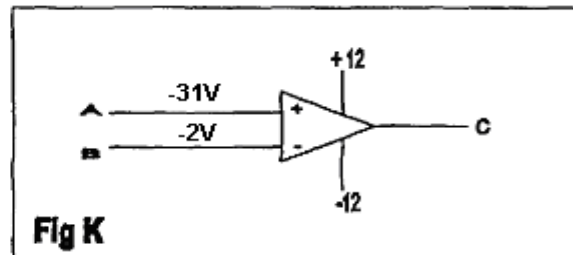
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- 12 a. What is the voltage at 'B' if +1.0 volt is applied to 'A'? (Fig J) (Hint: Use non-inverting OP-AMP formula)

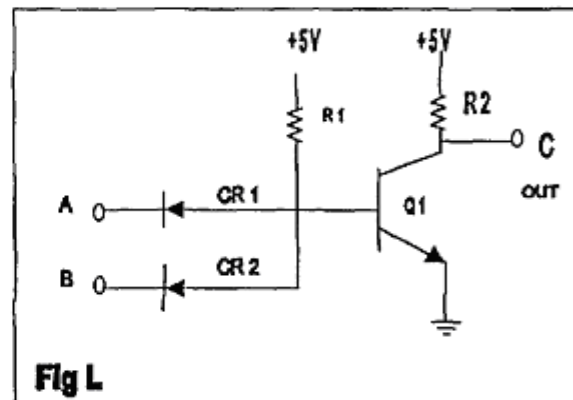
- b. What is the voltage at 'B' if +3 volts is applied? (Fig J) (Hint: Note power supply inputs limit maximum voltage output)



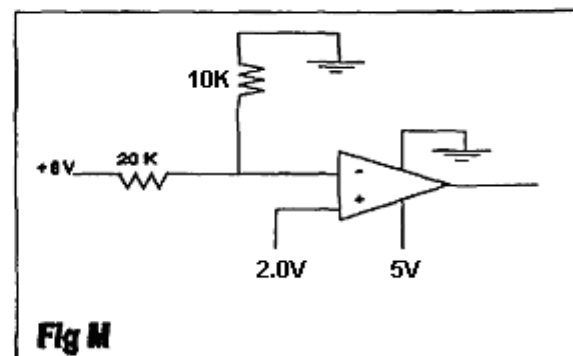
13. What is the voltage at 'C'? (Fig K)



14. In the Analog circuit at right Q1 is either fully on or off. Draw a truth table for this circuit. What digital device will perform the same function as this Analog circuit? (Fig L)



15. The circuit at right is a +9 volt monitor which outputs a high if +9 volts falls below some critical value. What is that critical value? (Fig M) (Hint: Use voltage divider formula with V_o equal to the voltage at which the comparator output switches high)



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16. What is the polarity of 'A' if 'B' is +35 volts? If 'B' equals -35 volts and only one component is bad, which is it? (Fig N)

