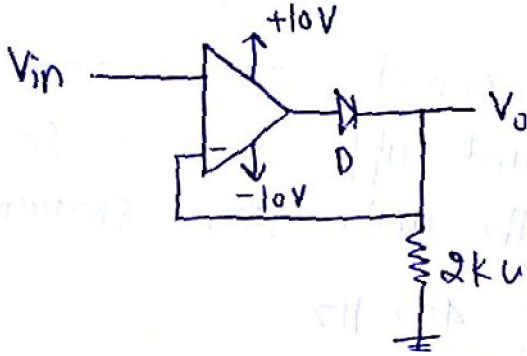


FULL LENGTH TEST

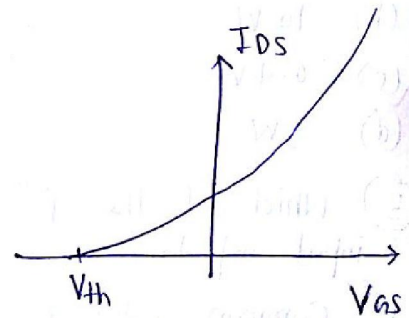
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1. For the given circuit, assume diode and op-amp both are ideal, determine the value of V_0 for $V_{in} = 3V$.



- (a) +10 V
(b) -10 V
(c) 3 V
(d) 0 V
2. Determine the power dissipation in a BJT, if thermal resistance is $5^\circ C/Watt$ and the temperature difference between junction and ambient is $2^\circ C$. Then power dissipation across the BJT is
- (a) 2.5 W
(b) 10 W
(c) 0.4 W
(d) 3 W
3. Which of the following configuration has maximum input impedance
- (a) Common collector configuration
(b) Darlington pair configuration
(c) Bootstrapping configuration
(d) Common emitter configuration
4. The resistance offered by JFET in ohmic region is 1000Ω when width of channel available is $6\mu\Omega$. Find the available width of channel when resistance becomes 750Ω .
- (a) $10\mu\Omega$
(b) $8\mu\Omega$

- (c) $4\mu\Omega$
(d) $3\mu\Omega$
5. Consider an op-amp having open loop gain is 10^4 and upper cut-off frequency is 4 MHz. Determine the unity gain frequency of the op-amp.
- (a) 400 Hz
(b) 400 MHz
(c) 40 GHz
(d) 400 KHz
6. The transfer characteristics shown in the figure represents a:

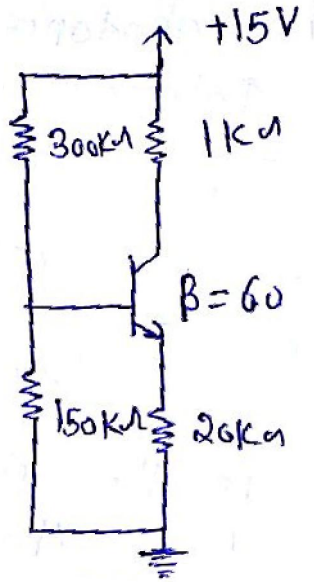


- (a) Enhancement type NMOSFET
(b) Enhancement type PMOSFET
(c) Depletion type NMOSFET
(d) Depletion type PMOSFET
7. The frequency response of a direct-coupled is behaves like a:
- (a) Band pass filter
(b) High pass filter
(c) Low pass filter
(d) Band reject filter
8. Determine the value of transconductance g_m for the given circuit if $V_{BE} = 0.7 V$

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FULL LENGTH TEST

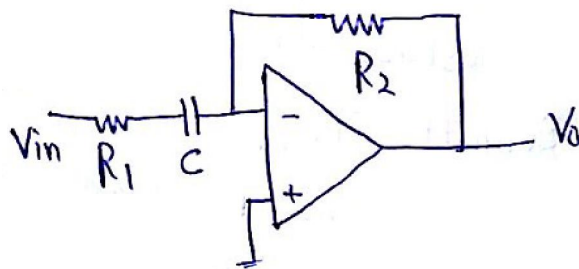
ANALOG ELECTRONICS



- (a) 15.6 mA/V
- (b) 7.8 mA/V
- (c) 3.9 mA/V
- (d) 1.95 mA/V

9. Determine the percentage change in the closed loop gain percentage change in open loop gain is 30%. Given open loop gain A is 100 and negative feedback factor β is 0.04
- (a) 60%
 - (b) 15%
 - (c) 20%
 - (d) 6%

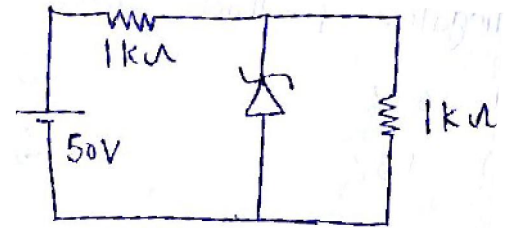
10. For the given filter, determine the type and cut-off frequency of the filter.



- (a) LPF, & $f_c = \frac{1}{2\pi R_2 C}$

- (b) HPF, & $f_c = \frac{1}{2\pi R_1 C}$
- (c) LPF, & $f_c = \frac{1}{2\pi R_1 C}$
- (d) HPF, & $f_c = \frac{1}{2\pi R_2 C}$

11. For an enhancement type n-channel MOSFET the capacitance between gate to source is 2 pf and capacitance between gate to drain is 4 pf. Determine the miller capacitance if A_{vo} is -50.
- (a) 102 pf
 - (b) 98 pf
 - (c) 196 pf
 - (d) 204 pf
12. Determine the minimum power rating of the zener diode, so that voltage across load resistance 1 kΩ is 10 volt, given the knee current of zener diode is 5 mA.



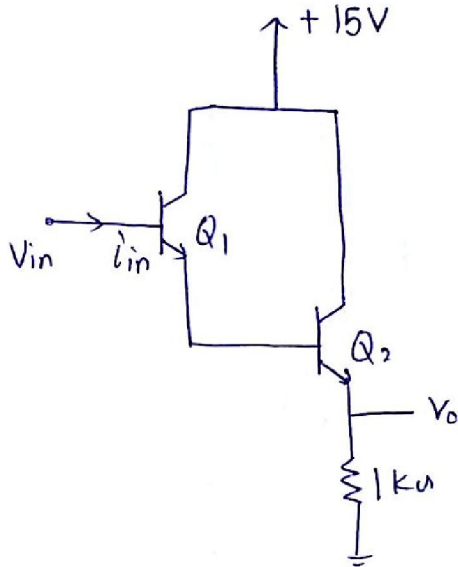
- (a) 400 mW
- (b) 50 mW
- (c) 300 mW
- (d) 200 mW

13. Which of the following electronic circuit generally used for the generation square wave.
- (a) Monostable multivibrator
 - (b) Schmitt-Trigger
 - (c) Astable-Multivibrator
 - (d) Bistable-Multivibrator
14. For the given transistors the value of β is 100, the overall current gain of the transistor pair is nearly equal to the

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FULL LENGTH TEST

ANALOG ELECTRONICS

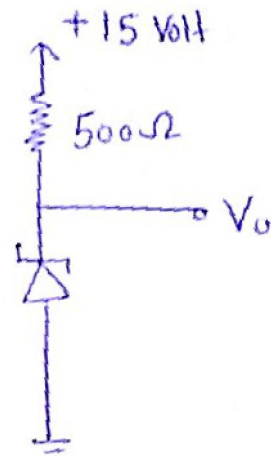


- (a) 10
- (b) 100
- (c) 1000
- (d) 10000

15. Consider an amplifier operating from ± 15 V power supplies. It is fed with a sinusoidal voltage having 2 V peak and delivers a sinusoidal voltage output of 12 volt peak to a 1 k Ω load. Determine the efficiency of the amplifier, if takes 8 mA current from the power supplies.

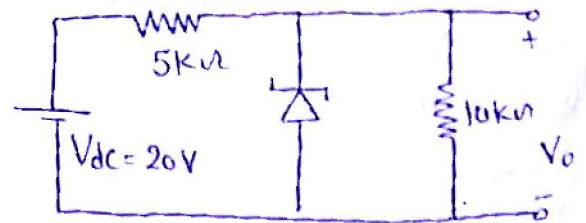
- (a) 80%
- (b) 72.3%
- (c) 60.35%
- (d) 45.72%

16. In the given circuit $V_z = 6$ volt and $\gamma_z = 50\Omega$. Determine the value of V_o .



- (a) 6 volt
- (b) 6.82 volt
- (c) 5.18 volt
- (d) +15 volt

17. In the given circuit if V_{dc} is change by ± 2 volt. Then determine line regulation. Given $V_z = 8$ volt, and knee current of zener diode is 2 mA.

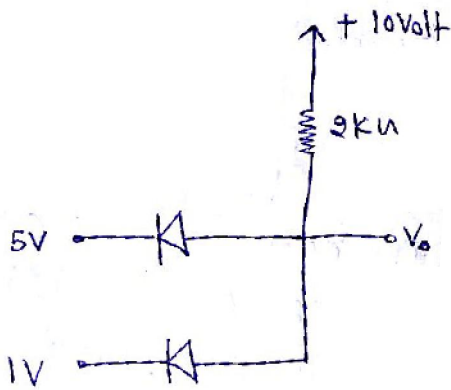


- (a) 15%
- (b) 0
- (c) 20%
- (d) 25%

18. In the given circuits assume both the diodes are ideal, the value of I and V are respectively

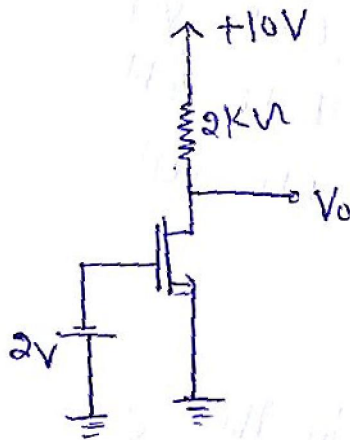
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FULL LENGTH TEST
ANALOG ELECTRONICS



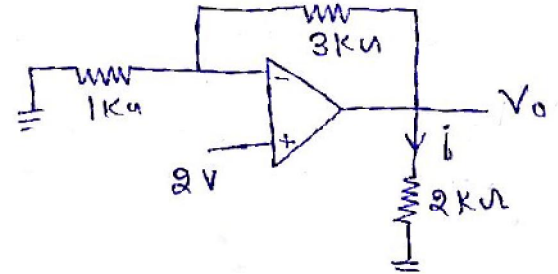
- (a) 4.5 mA, 1 volt
- (b) 2.5 mA, 5 volt
- (c) 4.5 mA, 5 volt
- (d) 2.5 mA, 2.5 volt

19. In the given circuit, the parameter of MOSFET is given as, $V_{th} = 1V$, $\mu_n C_{ox} = 1 \text{ mA/V}^2$. Determine the value of V_o .



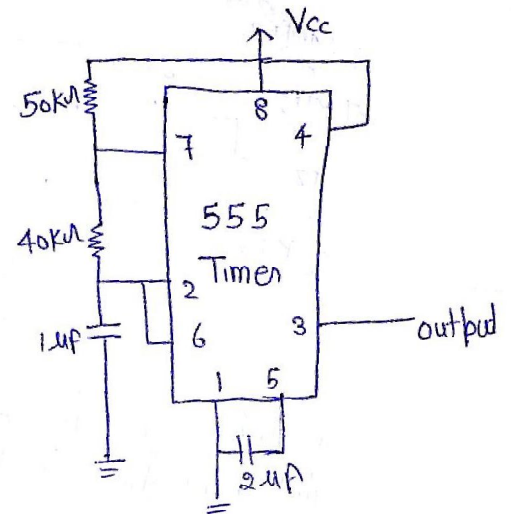
- (a) 5 volt
- (b) 8 volt
- (c) 10 volt
- (d) 0 volt

20. For the given circuit, the op-amp is ideal, determine the current I in the circuit.



- (a) 8 mA
- (b) 4 mA
- (c) 2 mA
- (d) 0 mA

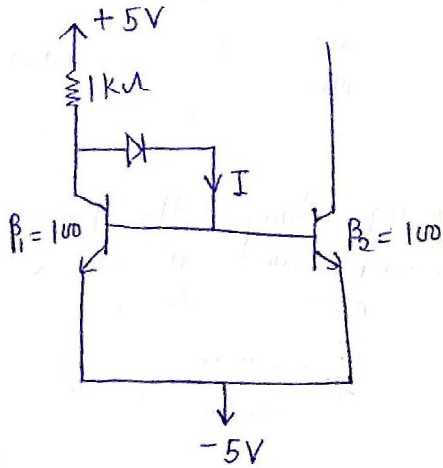
21. For the given arrangement, determine the duty cycle of the output waveform



- (a) 44.44 %
- (b) 55.55 %
- (c) 64.28 %
- (d) 69.23 %

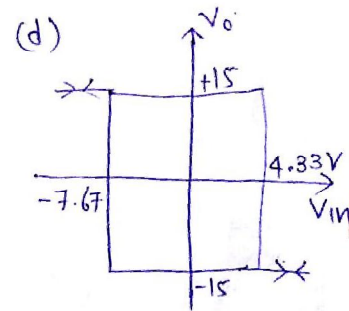
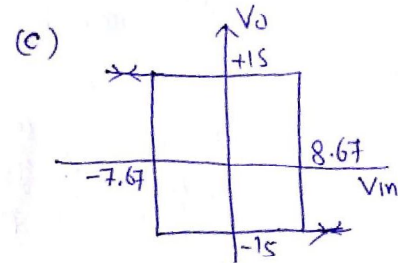
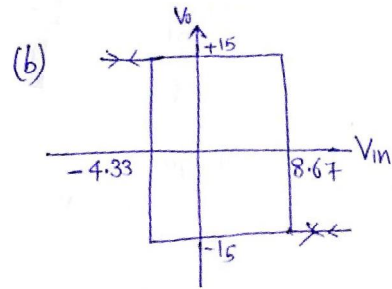
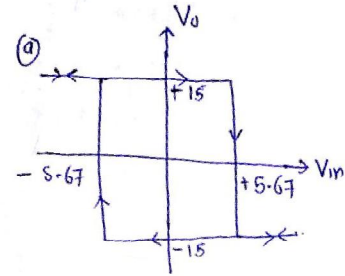
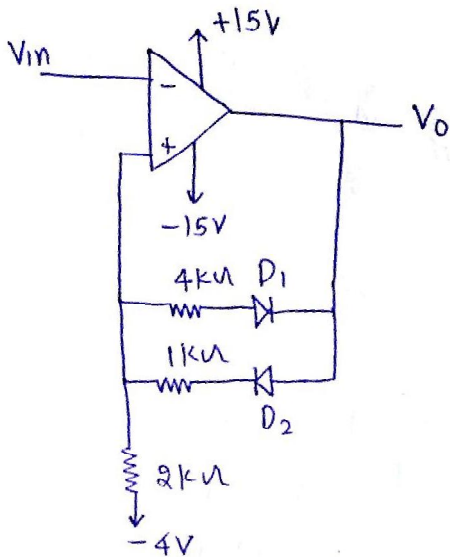
22. The forward bias threshold voltage of the diode is 0.7. Determine the current I through the diode in the given circuit.

FULL LENGTH TEST
ANALOG ELECTRONICS



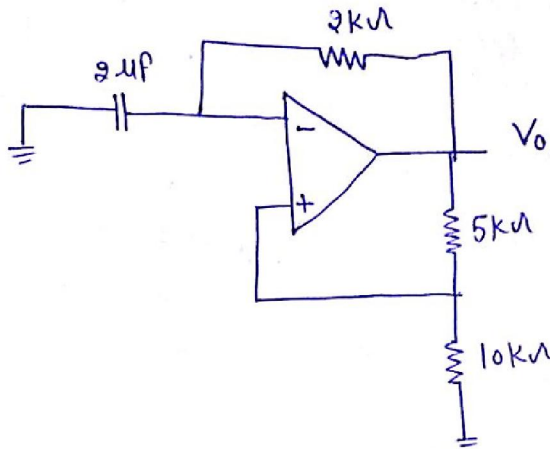
- (a) 8.43 mA
- (b) 84 μ A
- (c) 168 μ A
- (d) 8.6 mA

23. Determine the transfer characteristics of the given circuit, assume that diodes are ideal.



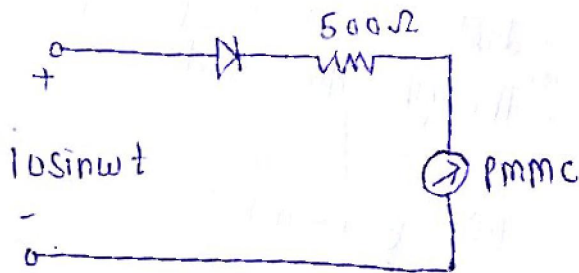
24. For the given circuit, determine the oscillation frequency.

FULL LENGTH TEST
ANALOG ELECTRONICS



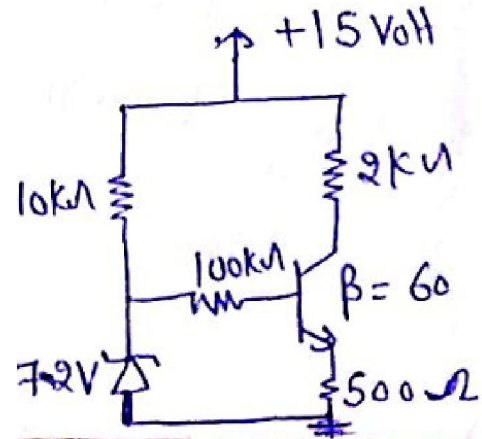
- (a) 127.3 Hz
- (b) 77.67 kHz
- (c) 77.67 Hz
- (d) 127.34 kHz

25. In the given circuit, assume the diode is ideal, determine the reading of the meter if the internal resistance of meter is 500Ω .



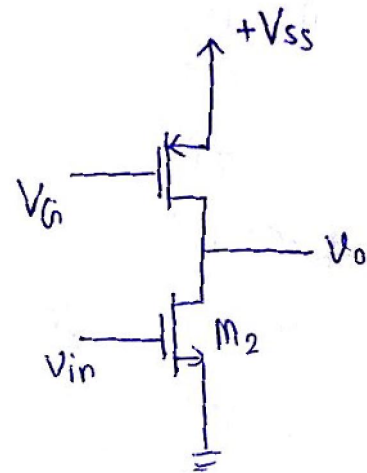
- (a) 10 mA
- (b) 3.184 mA
- (c) 5 mA
- (d) 6.36 mA

26. Determine the power dissipation across the zener diode in the given circuit, if zener break-down voltage is 7.2 V.



- (a) 2.97 mW
- (b) 5.256 mW
- (c) 5.328 mW
- (d) 0.288 mW

27. The value of voltage gain $\frac{V_o}{V_{in}}$ for the given circuit is

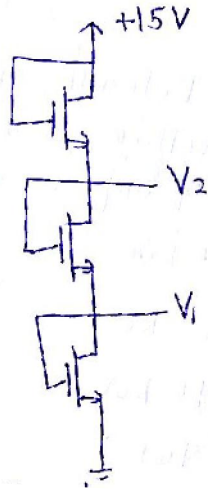


- (a) $-gm_2(r_o \parallel r_o)$
- (b) $-gm_2(r_o \parallel r_o)$
- (c) $-gm_1(r_o \parallel r_o)$
- (d) $-gm_1(r_o \parallel r_o)$

28. For the given circuit, all the MOSFET are perfectly matched to each other, the value of V_1 and V_2 respectively.

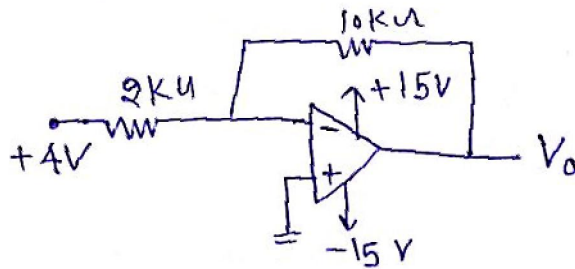
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FULL LENGTH TEST
ANALOG ELECTRONICS



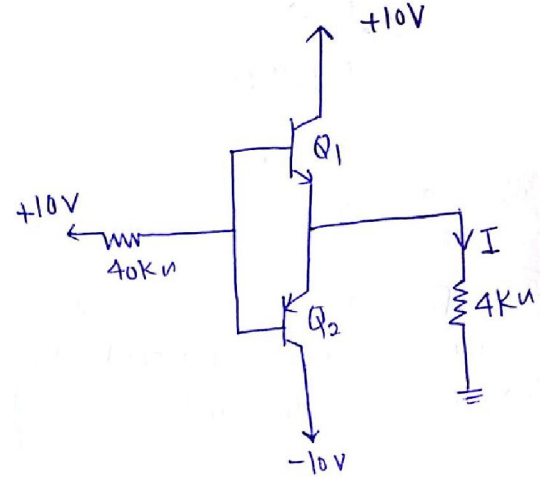
- (a) 10V, 10V
- (b) 5V, 5V
- (c) 5V, 10V
- (d) 10V, 5V

29. Assume op-amp is ideal, the value of V_0 in the given circuit is



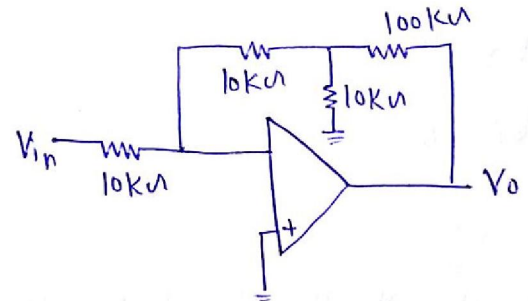
- (a) -20V
- (b) -15V
- (c) +15V
- (d) +20V

30. Determine the current I in the given circuit, if value of β of both the transistors are 80.



- (a) 2.069 mA
- (b) -2.069 mA
- (c) 1.73 mA
- (d) -1.73 mA

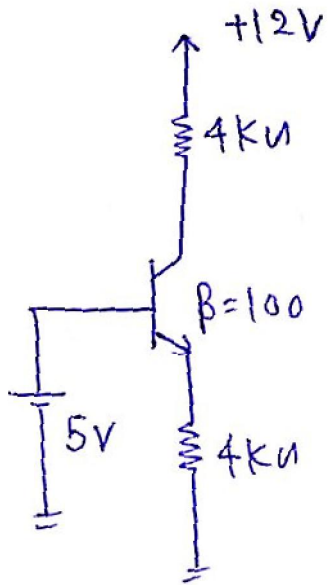
31. Determine the input impedance seen by voltage source in the given circuit. Assume op-amp is ideal.



- (a) 5kΩ
- (b) 20 kΩ
- (c) 15 kΩ
- (d) 10 kΩ

32. Determine the region of operation of given BJT.

FULL LENGTH TEST
ANALOG ELECTRONICS



- (a) Active region
- (b) Saturation region
- (c) Cut off region
- (d) Reverse active region