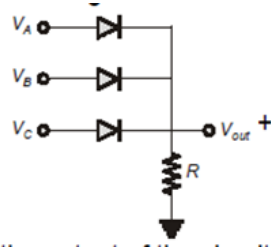


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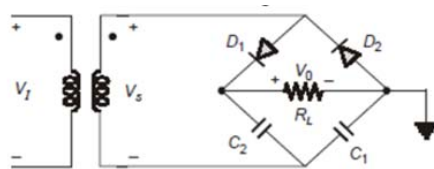
ANALOG CIRCUITS - 1

1. In the figure shown below the diodes are ideal



the output of the circuit when $V_A = 5V$, $V_B = 3V$, and $V_C = 1V$ will be

- a) 3V b) 0V c) 5V d) 1V
2. For a rectifier circuit, the ripple factor is a measure of
- a) its filter efficiency b) diode rating
- c) its voltage regulation d) value of AC component in DC output
3. The diodes shown in figure below are ideal. The circuit works as

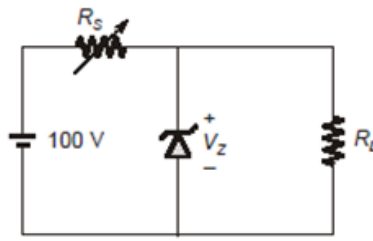


- a) Bridge rectifier b) Voltage doubler c) Rectifier with filter d) Comparator
4. In the circuit shown below, zener diode has following parameters

$$V_Z = 50V$$

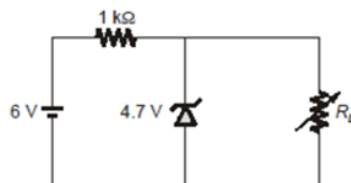
$$I_{Z_{min}} = 5mA$$

$$I_{Z_{max}} = 40mA$$



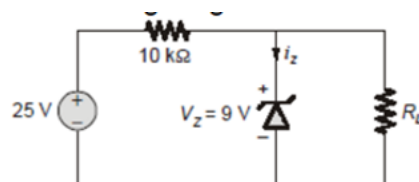
The relation between R_S and R_L for limiting case will be

- a) $R_S > R_L$ b) $R_L > R_S$ c) $R_L = R_S$ d) Can't be predicted
5. Consider the voltage regulator circuit given below in which diode is working in reverse breakdown region



Zener diode has an internal resistance of 20Ω . When a current of 20mA is flowing through zener diode, the voltage across resistance R_L is _____ V.

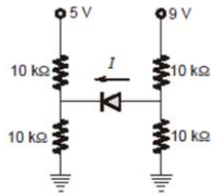
6. In the voltage regulator circuit shown below



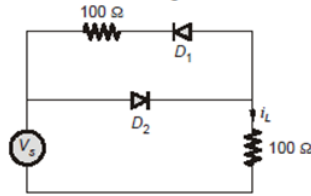
given that $i_{Z(\min)} = 0.6\text{mA}$, then the maximum value of load current is _____ mA.

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7. Assume that the diode in the circuit is ideal, then the value of I in the circuit is _____ mA.



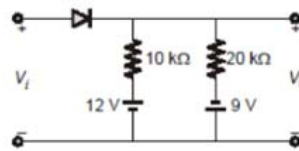
8. In the circuit diagram shown below, both the diodes are ideal and internal resistance of voltage source is negligible



Voltage source is a square waveform generator with peak to peak voltage of 20V with a time period of 1 ms with zero average value. The average value of current i_L will be

- a) 15 mA b) 25 mA c) 20 mA d) 16.67 mA

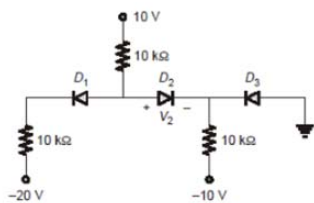
9. For the circuit shown below the diode is an ideal diode



As V_i varies from -10 V to 10 V, then which of following represents the transfer characteristics of the circuit?

- a) b) c) d)

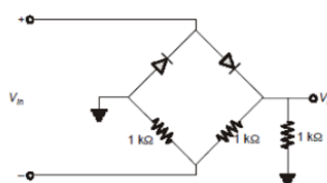
10. 3 diodes with cut-in voltage of 0.7V each are connected as shown in figure below



The status of all the diodes will be

- | | | | |
|----|-------|-------|-------|
| | D_1 | D_2 | D_3 |
| a) | ON | ON | ON |
| b) | OFF | ON | OFF |
| c) | ON | OFF | ON |
| d) | ON | ON | OFF |

11. Consider the circuit shown below

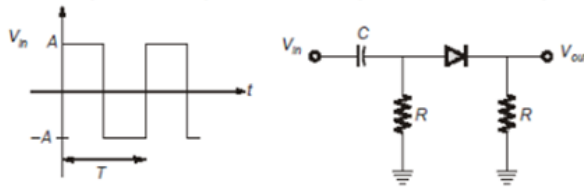


If the input of the signal is $10\sin \omega_0 t$ then the output of the signal will be (Assume the diodes to be ideal)

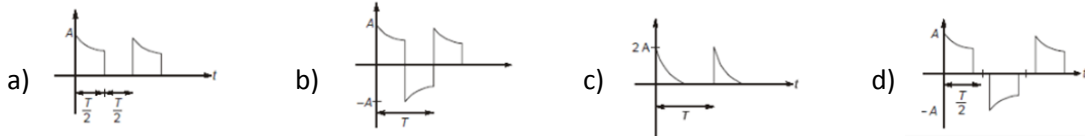
- a) b) c) d)

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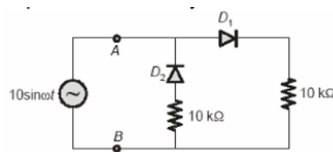
12. Given a periodic square wave of period T as an input to the circuit shown below



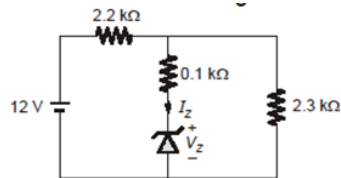
Let $T \gg RC$ then the output of the above circuit will be



13. A sinusoidal voltage source $V_{AB} = 10 \sin \omega t$ Volts, is applied across the terminal A and B. Here both the diodes are ideal. The impedance offered by the circuit across the terminal A and B is _____ $k\Omega$

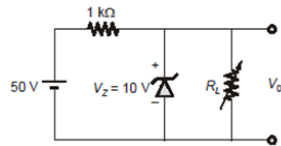


14. The break-down voltage of zener diode shown in figure below is 4 volts.



The current I_Z through zener diode is _____ mA.

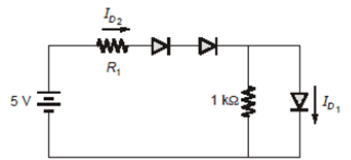
15. A zener diode regulator circuit is working properly with a specific value of R_L



Given that $I_{Z_{max}} = 32 \text{ mA}$, $I_{Z_{min}} = 8 \text{ mA}$

The minimum value of R_L for proper operation of the regulator is _____ Ω

16. Consider the diode circuit given below



Each diode has a cut in voltage of $V_v = 0.65 \text{ V}$. The value of R_1 for which I_{D_2} is half of I_{D_1} , is _____ $k\Omega$

ANSWERS :

- | | | | | | |
|---------------------|--------|-----------------------|-----------------------------|---------------------|------|
| 1.c | 2.d | 3.b | 4.b | 5. 5.1(4.90 – 5.30) | 6. 1 |
| 7. 0.20 (0.15-0.25) | 8. B | 9.b | 10.c | 11.b | |
| 12.c | 13. 10 | 14. 1.7 (1.50 – 1.90) | 15. 312.5 (312.00 – 313.00) | | |

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