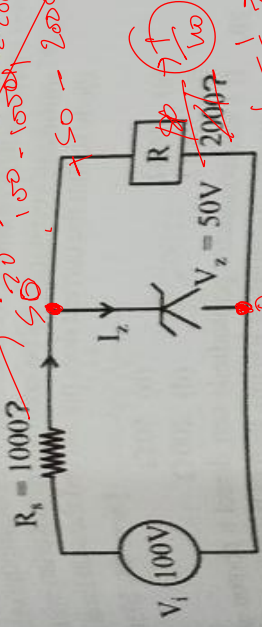


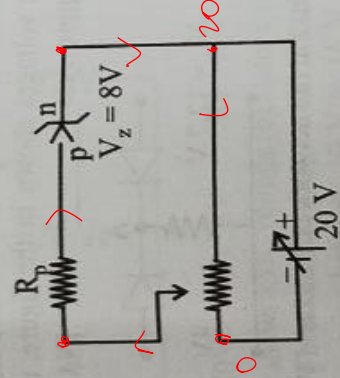
8. For the circuit shown below, calculate the value of I_z .

[July 20, 2021 (I)]

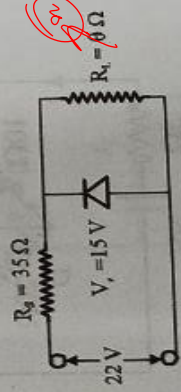


- (a) 25 mA
(b) 0.15 A
(c) 0.1 A
(d) 0.05 A

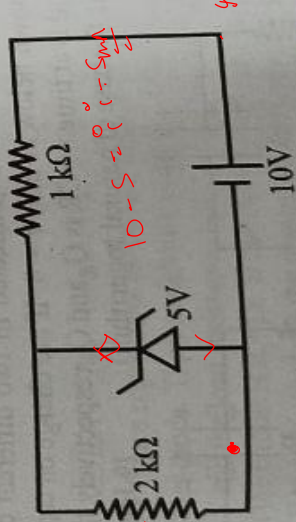
9. A zener diode having zener voltage 8 V and power dissipation rating of 0.5 W is connected across a potential divider arranged with maximum potential drop across zener diode is as shown in the diagram. The value of protective resistance R_p isΩ. [NA, July 20, 2021 (II)]



10. The value of power dissipated across the zener diode ($V_z = 15V$) connected in the circuit as shown in the figure is $x \times 10^{-1}$ watt [March 16, 2021 (II)]



The value of x , to the nearest integer, is _____.
11. In connection with the circuit drawn below, the value of current flowing through 2 kΩ resistor is $\frac{x}{y} \times 10^{-4}$ A.



[Feb. 24, 2021 (I)]

12. Zener breakdown occurs in a $p-n$ junction having p and n both :
(a) lightly doped and have wide depletion layer
(b) heavily doped and have narrow depletion layer
(c) lightly doped and have narrow depletion layer
(d) heavily doped and have wide depletion layer

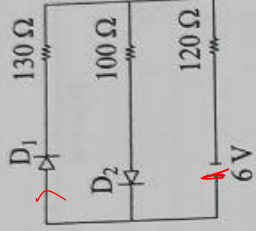
- (a) lightly doped and have wide depletion layer
(b) heavily doped and have narrow depletion layer
(c) lightly doped and have narrow depletion layer
(d) heavily doped and have wide depletion layer

13. LED is constructed from Ga-As-P semiconducting material. The energy gap of this LED is 1.9 eV. Calculate the wavelength of light emitted and its colour.
[$h = 6.63 \times 10^{-34}$ Js and $c = 3 \times 10^8 \text{ ms}^{-1}$]

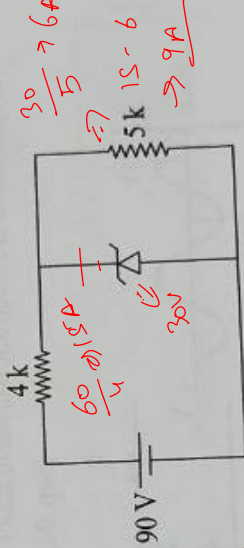
[Feb. 26, 2021 (I)]

- (a) 654 nm and red colour
(b) 1046 nm and blue colour
(c) 1046 nm and red colour
(d) 654 nm and orange colour

14. The circuit contains two diodes each with a forward resistance of 50 Ω and with infinite reverse resistance. If the battery voltage is 6 V, the current through the 120 Ω resistance is ____ mA. [Feb. 26, 2021 (I)]



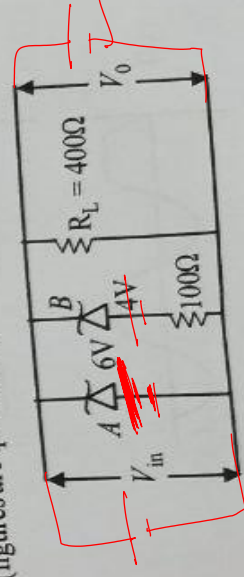
15. The zener diode has a $V_z = 30$ V. The current passing through the diode for the following circuit is ____ mA. [Feb. 26, 2021 (II)]



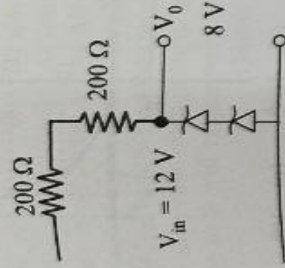
16. With increasing biasing voltage of a photodiode, the photocurrent magnitude :
(a) remains constant
(b) increases initially and after attaining certain value, it decreases
(c) Increases linearly
(d) increases initially and saturates finally

17. Two Zener diodes (A and B) having breakdown voltages of 6 V and 4 V respectively, are connected as shown in the circuit below. The output voltage V_0 variation with input voltage linearly increasing with time, is given by :
($V_{\text{input}} = 0$ V at $t = 0$)
(figures are qualitative)

[Sep. 05, 2020 (II)]

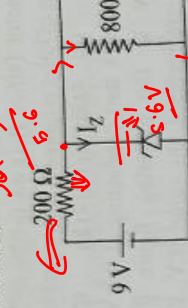


24. The circuit shown below is working as a 8 V dc regulated voltage source. When 12 V is used as input, the power dissipated (in mW) in each diode is; (considering both zener diodes are identical) _____ [NA 9 Jan. 2020 II]



- (a) 0.5 mA; 6 mA
(b) 1 mA; 8.5 mA
(c) 0.5 mA; 8.5 mA
(d) 1.5 mA; 8.5 mA

28. The reverse breakdown voltage of a Zener diode is 5.6 V in the given circuit.

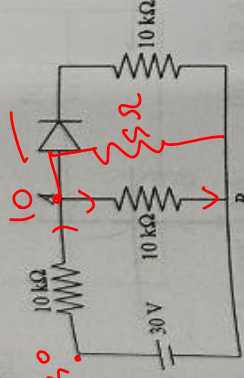


The current I_z through the Zener is :

- (a) 10 mA
(b) 17 mA
(c) 15 mA
(d) 7 mA

25. In the figure, potential difference between A and B is:

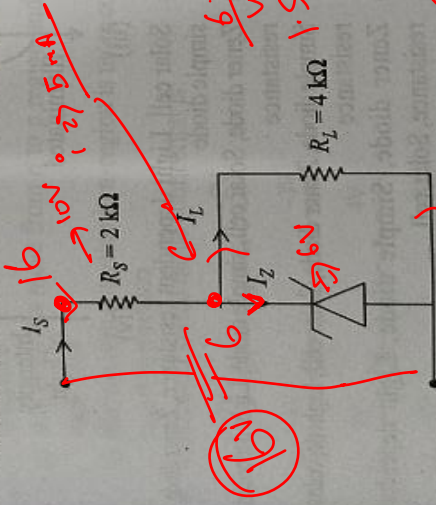
[7 Jan. 2020 II]



- (a) 10V
(b) 5V
(c) 15V
(d) zero

26. Figure shows a DC voltage regulator circuit, with a Zener diode of breakdown voltage = 6V. If the unregulated input voltage varies between 10 V to 16 V, then what is the maximum Zener current?

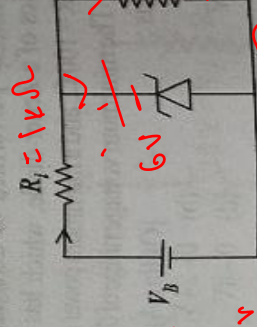
[12 Apr. 2019 II]



(a) 2.5 mA
(b) 1.5 mA
(c) 7.5 mA
(d) 3.5 mA

27. The figure represents a voltage regulator circuit using a Zener diode. The breakdown voltage of the Zener diode is 6V and the load resistance is $R_L = 4\text{ k}\Omega$. The series resistance of the circuit is $R_s = 1\text{ k}\Omega$. If the battery voltage V_B varies from 8V to 16V, what are the minimum and maximum values of the current through Zener diode?

[10 Apr. 2019 II]

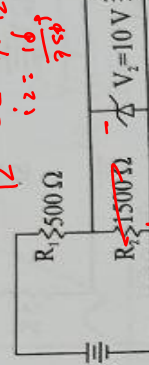


(a) $V_B = 8\text{V}$

$\Rightarrow 8 - 1 - 6 = 0$
 $\Rightarrow 1 = 2\text{mA}$
 $\Rightarrow 1.5 \times 0.5 = 0.75\text{mA}$
 $\Rightarrow 2 - 1.5 = 0.5\text{mA}$

29. In the given circuit the current through Zener Diode is close to :

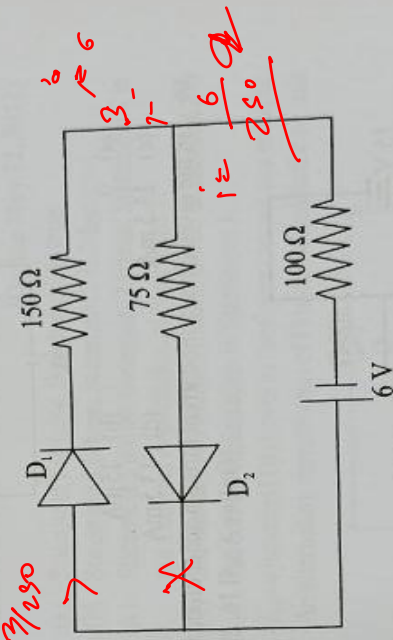
[11 Jan. 2019 I]



- (a) 0.0 mA
(b) 6.7 mA
(c) 4.0 mA
(d) 6.0 mA

30. The circuit shown below contains two ideal diodes, each with a forward resistance of 50Ω . If the battery voltage is 6V, the current through the 100Ω resistance (in Amperes) is :

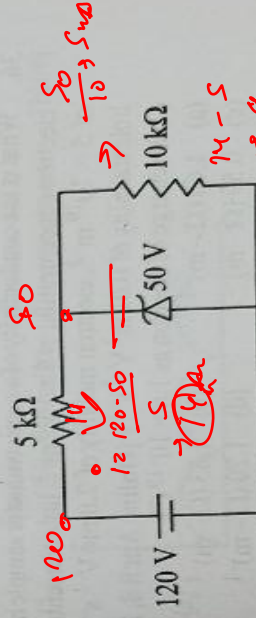
[11 Jan. 2019 II]



- (a) 0.036
(b) 0.020
(c) 0.027
(d) 0.030

31. For the circuit shown below, the current through the Zener diode is:

[10 Jan. 2019 II]



- (a) 9 mA
(b) 5 mA
(c) Zero
(d) 14 mA

(a) $V_B = 8\text{V}$
 $\Rightarrow 8 - 1 - 6 = 0$
 $\Rightarrow 1 = 2\text{mA}$
 $\Rightarrow 1.5 \times 0.5 = 0.75\text{mA}$
 $\Rightarrow 2 - 1.5 = 0.5\text{mA}$