SOLUTION

Link to View Video Solution: 👉 Click Here
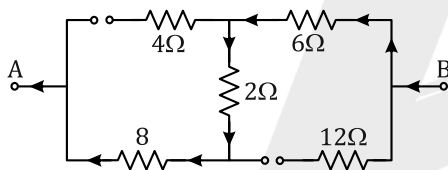
1.   The current through circuit

$$i = \frac{P}{V} = \frac{100 \times 10^{-3}}{0.5} = 0.2 \text{ A}$$

∴ Voltage drop across resistance $= 1.5 - 0.5 = 1$ V
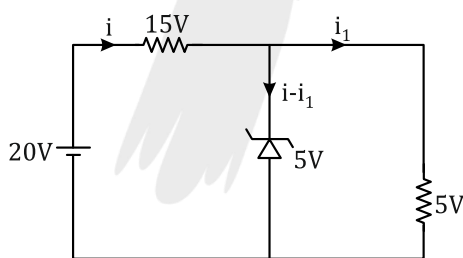
$$\Rightarrow R = \frac{1}{0.2} = 5\Omega$$

2.   According to the given figure, A is at lower potential w.r.t. B. Hence, both diodes are in reverse biasing. So equivalent circuit can be redrawn as follows:

⇒ Equivalent resistance between A and B

$$R = 8 + 2 + 6 = 16\Omega$$

3.

$$i - i_1 = \frac{15}{1000} - \frac{5}{2000} = 12.5 \text{ mA}$$

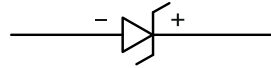4.   ∴ Voltage across capacitor

$$= E_{rms}\sqrt{2} = 200 \times \sqrt{2} \text{ V} = 282.8 \text{ V} \approx 283 \text{ V}$$

5. $V_{rms} = \frac{V_0}{2} = \frac{220\sqrt{2}}{2} = \frac{220}{\sqrt{2}} = 110\sqrt{2}$ V

6. Zener breakdown in a semiconductor diode occurs when diode is connected in reverse bias.

7. Zener breakdown can occur in heavily doped diodes. In lightly doped diodes, the necessary voltage is higher and avalanche multiplication is then the chief process involved.

$$- \!\!\!\! \rightarrow\!\!\!| \, +$$

8.

9. For full wave rectifier, $\eta = \dfrac{81.2}{1 + \dfrac{r_f}{R_L}}$

$\Rightarrow n_{max} = 81.2\% (r_f << R_L)$

10. Half wave rectifier has one diode in series with the secondary transformer.

11. $A \rightarrow C$