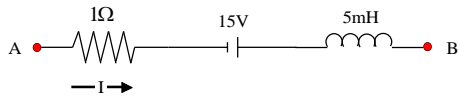
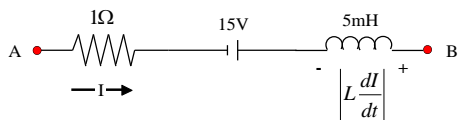


The network shown below is part of a complete circuit. Which of the following is the potential difference $V_B - V_A$, when the current I is 5A and is decreasing at a rate of 10^3 A s^{-1} ?



- (A) 5V (B) 0V (C) -5V (D) 15V

Solution



$$\text{We have, } V_A - IR + 15V + \left| L \frac{dI}{dt} \right| = V_B$$

$$\Rightarrow V_A - 5 \times 1 + 15 + \left| 5 \times 10^{-3} \times (-10^3) \right| = V_B$$

$$\Rightarrow V_A - 5 + 15 + 5 = V_B$$

$$\Rightarrow V_B - V_A = 15V$$

Hence, (D)