Example 18

A magnetic field of 10 T acts normal to a coil of 50 turns having 100 cm^2 area. Find emf induced if the coil is removed from magnetic field in 0.1 s.

Solution:-

$B = 10\ T$

$n = 50$ turns

$A = 100\ cm^2 = 100 \times (10^{-2})^2 = 100 \times 10^{-4} = 10^{-2}\ m^2$

$t = 0.1\ s$

$e = ?$

$$e = \frac{d\phi}{dt} = n \left| \frac{(B_2 A - B_1 A)}{t} \right|$$

$$\therefore |e| = 50 \times \frac{10 \times 10^{-2}}{0.1} = 500 \times 10^{-1} = 50\ V$$

Ans.

- x -