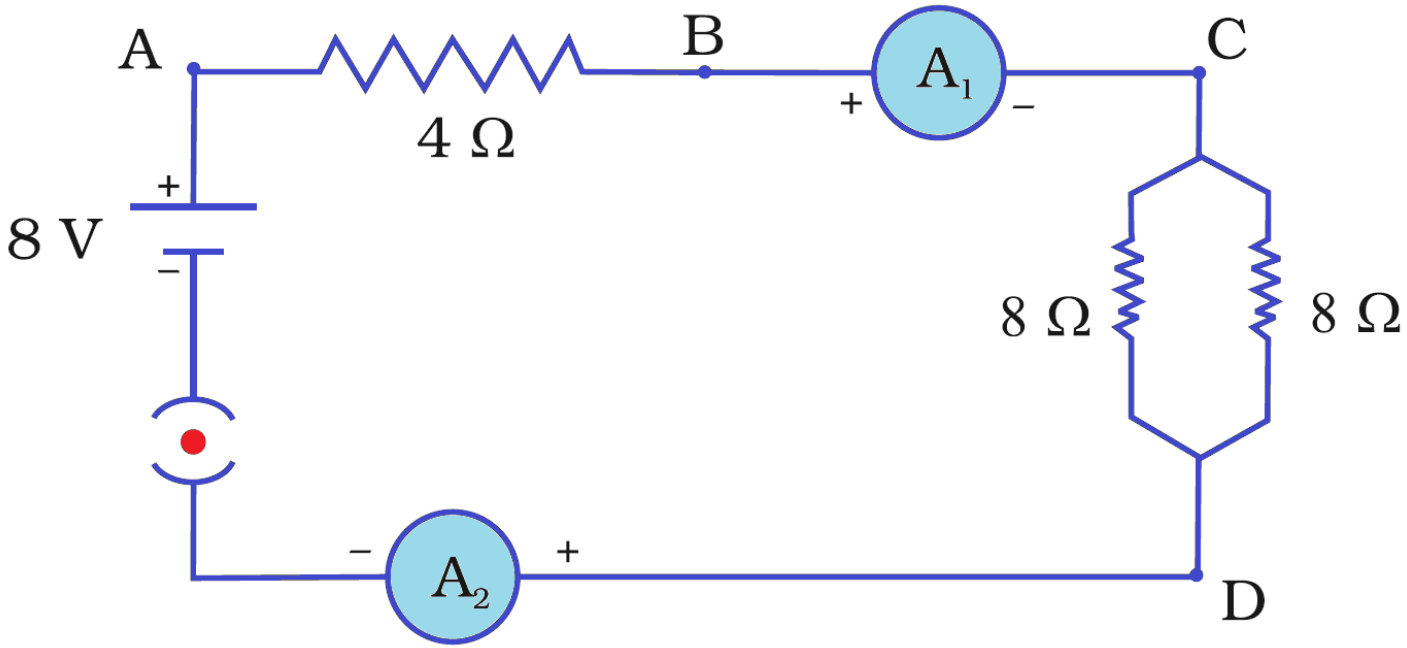
CASE STUDY QUESTION 37

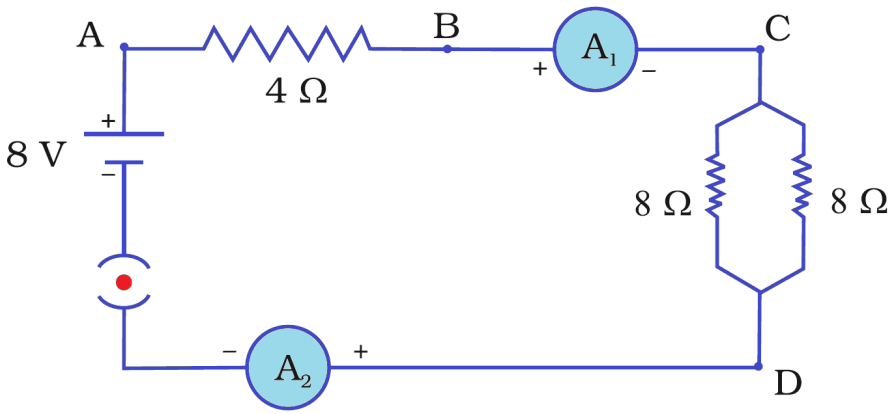
Read the following and answer any four questions from (i) to (v)

Aditya decided to complete his Physics Project. He purchased three resistors 4 Ω, 8 Ω and 8 Ω from the shop. Later he purchased a 8 V battery, switch (which works as key) and two ammeters to complete his circuit as shown below:



(i) Find the effective resistance of two 8 resistors in the combination

(a) 2 Ω (b) 4 Ω (c) 3 Ω (d) 5 Ω



$$R_p = \frac{8 \times 8}{8+8} = \frac{64}{16} = 4\Omega$$

(ii) Find the current flowing through the circuit.

(a) 1.2 A (b) 1.5 A (c) 1 A (d) 2 A

$$V = IR$$

$$8 = I(4+4) \Rightarrow I = 1A$$

(iii) Find the potential difference across 4 Ω resistance.

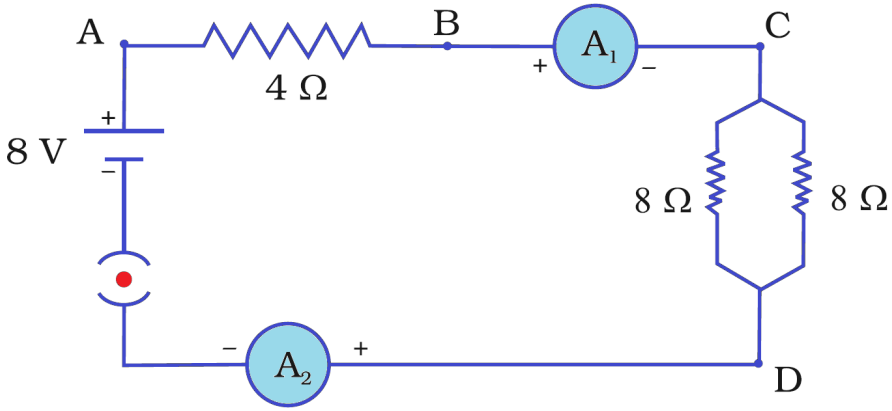
(a) 2 V (b) 3 V (c) 4 V (d) 5 V

Potential difference across 4Ω resistor $= IR$

$= 1 \times 4 = 4$ volt

(iv) Find the power dissipated in 4 Ω resistor

(a) 2 W (b) 3 W (c) 4 W (d) 5 W



Power dissipated in 4Ω resistor = I^2R

$= (1)^2 \times 4$

$= 4W$

(v) Find the difference in ammeter readings.

(a) 1 (b) 2 (c) 3 (d) No difference

There will be no difference in ammeter readings as the ammeters are connected in series.