



CLASS: XII

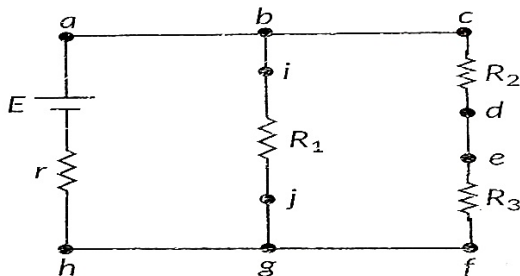
SUBJECT: PHYSICS

FM: 20

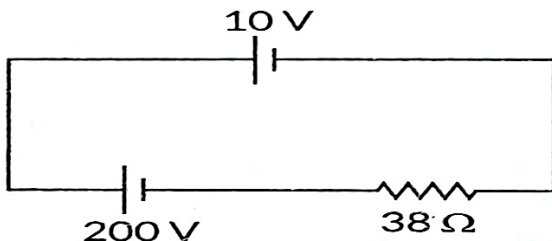
TIME: 45 MIN

(1 MARK)

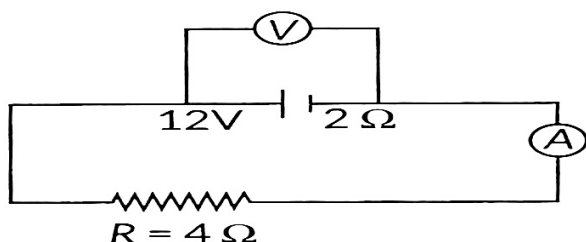
- Three resistors having values R_1 , R_2 and R_3 are connected in series to a battery. Suppose R_1 carries a current of 2.0 A, R_2 has a resistance of 3.0 ohms, and R_3 dissipates 6.0 watts of power. Then the voltage across R_3 is
a. 1 b. 2 c. 3 d. 4
- An experiment was set up with the circuit diagram shown in figure. Given that $R_1 = 10\Omega$, $R_2 = R_3 = 5\Omega$, $r = 0\Omega$ and $E = 5V$



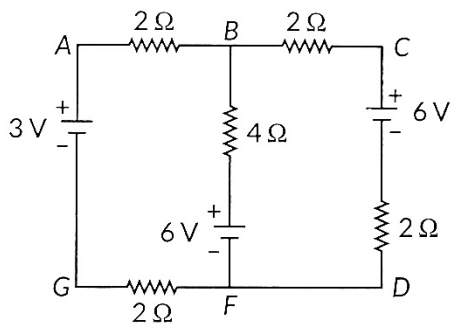
- The current through branch bg is
a) 1A b) $1/3A$ c) $1/2A$ d) $2/3A$
 - The power dissipated in R_1 is
a) 2W b) 2.5W c) 3W d) 4.5W
 - The potential difference across R_3 is
a) 1.5V b) 2V c) 2.5V d) 3V
- Write Kirchhoff's current law.
 - A 10 V cell of negligible internal resistance is connected in parallel across a battery of emf 200 V and internal resistance 38Ω as shown in the figure. Find the value of current in the circuit. **(2 MARKS)**



- In the figure shown, an ammeter A and a resistor of 4Ω are connected to the terminals of the source. The emf of the source is 12 V having an internal resistance of 2Ω . Calculate the voltmeter and ammeter readings. **(2MARKS)**



6. Derive the equation of the balanced state in a Wheatstone bridge using Kirchhoff's laws. **(3 MARKS)**
7. The figure shows a circuit with three ideal batteries. Find the magnitude and direction of currents in the branches AG, BF and CD **(3 MARKS)**



8. (5 MARKS)

Two cells of emfs E_1 and E_2 and internal resistances r_1 and r_2 respectively are connected in parallel as shown in the figure. Deduce the expression for the

- equivalent emf of the combination
- equivalent internal resistance of the combination
- potential difference between the points A and B.

