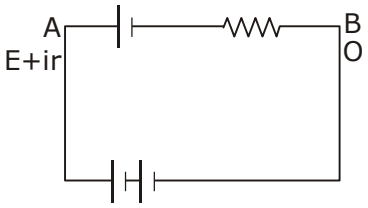
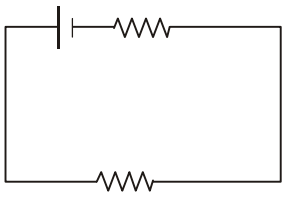
EXERCISE – II MULTIPLE CHOICE QUESTIONS

1. A,B,C



2. A



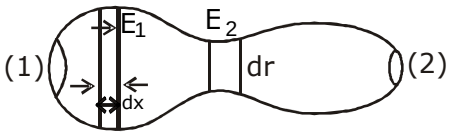
V = E – ir

– r = Slope

3. D $i = neAV_d$

V = iR

4. A,B,C,D



$i = neAV_d$ $\qquad R = \frac{\rho l}{A}$

$E_1 = \frac{V}{dx} \Rightarrow = \frac{i.R}{dx} = \frac{i.\rho.dx}{A.dx}$

$= \frac{i.\rho}{A} \qquad \Rightarrow E_1 \propto \frac{1}{A}$

$P = i^2R \Rightarrow i^2 \frac{\rho dx}{A}$

5. [A,D]

$i = neAV_d \Rightarrow dq = neAV_d \,.\, dt$

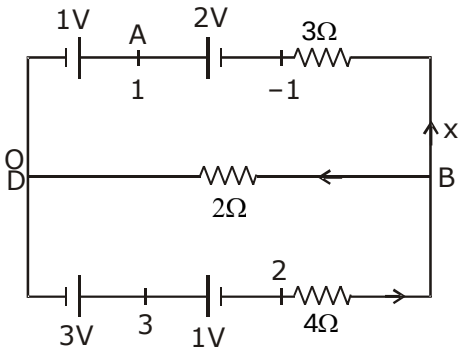
↓

is fixed.

6. C In parallle resistance ↓ ∴ i ↑

7. A,C,D

In parallel resistance ↓ ∴ i ↑



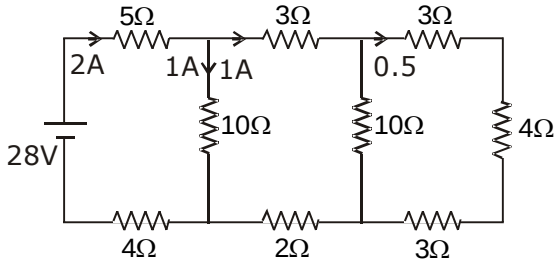
$\frac{x}{2} + \frac{x-2}{4} + \frac{x+1}{3} = 0$

$\frac{6x+3x-6+4x+4}{12} = 0$

$\Rightarrow 13x = 2$

$x = \frac{2}{13}$ volt

8. **A**

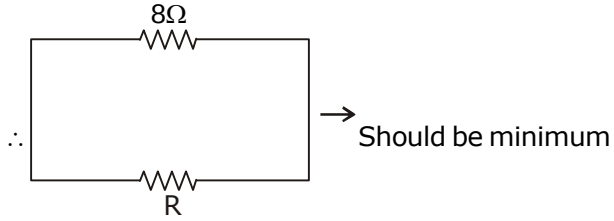


9. C In parallel combination equivalent resistance $R_{eq.}$ is less then the minimum value of any of resistance $R_1 < R$

In series R_{eq} is greater than maximum of resistance. $R_2 > R$.

10. A,C

Current should be maximum in 2Ω



$\Rightarrow$ R = 0

Power = 72 watt.

11. A,C

$R_1 = \frac{V}{I} = \frac{10V}{10mA} = 1k\Omega$

$R_2 = \frac{220V}{50mA} = 4.4k\Omega$ $\Rightarrow$ (A) and (C)

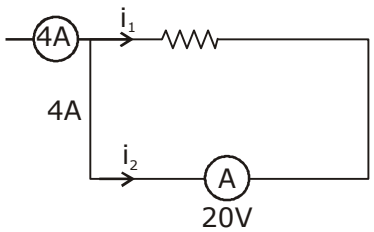
12. D $r = i_g (R + r_g)$

13. A,D

To ensure maximum current through ammeter its resistance should be small.

To ensure minimum current through voltmeter its resistance must be very large.

14.C



$R = \frac{V}{i}$

$i_1 < 4A$

$20 = i_1 R$

$R = \frac{20}{i_1} > 5\Omega$

15. B,C

$i = i_g \left(1 + \frac{r_g}{R}\right)$

$V = i_g (r + R_g)$

16. A,C,D

If devices are ideal then $R_v = \infty$ so $i = 0$

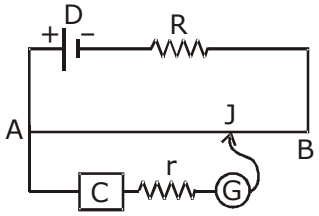
$R_A = 0$

So (A)

(C)

(D) $\because$ Current through ammeter and voltmeter will be high.

17. A



(A) Zero deflection does not depend on r

(B) If $R > R_0$ then drop across potentiometer is negligible

$\therefore$ We will not get zero deflection

(C) Notes

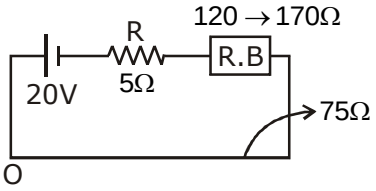
(D) Notes

18. A,B

As emf of E_1 is distributed over the wire AB. Hence A is correct E_2 is balanced by fraction of length of wire $E_1 > E_2$.

We only balance potential difference hence B is correct.

19. A,B,C



$V_{max} = \frac{20 \times 75}{200} = 7.5$ volt

A, B, C

20. A,C

In parallel each will take 10A and hence combination requries 10 + 10 = 20 A

In series current will be same in each fuse and that will be equal to required circuit current hence combination requires the same current 10 A