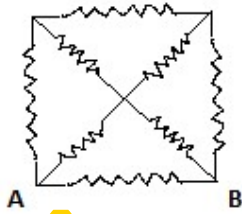
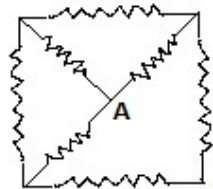


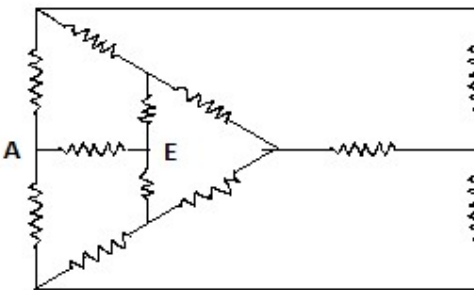
Multiple choice questions with one correct alternative



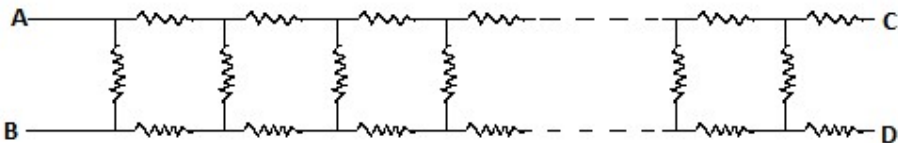
1. Equivalent resistance between A and B is
- *(A) $\frac{8r}{15}$ (B) $\frac{7r}{15}$ (C) $\frac{15r}{8}$ (D) $\frac{15r}{7}$



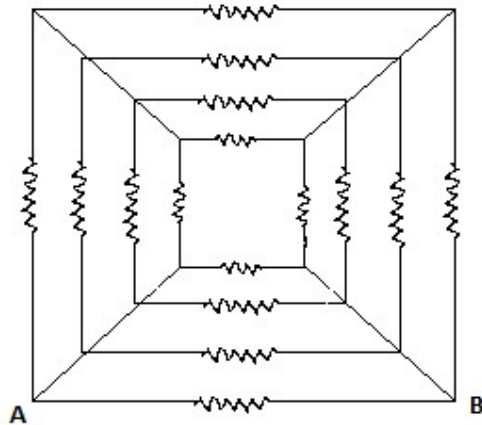
2. Equivalent resistance between A and B is
- (A) $\frac{8r}{7}$ *(B) $\frac{7r}{8}$ (C) $\frac{3r}{4}$ (D) r



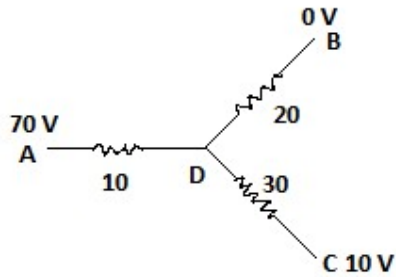
3. Equivalent resistance between A and E is
- *(A) $\frac{7r}{12}$ (B) $\frac{7r}{13}$ (C) $\frac{7r}{15}$ (D) $\frac{8r}{13}$



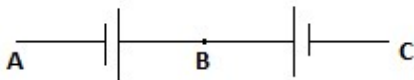
4. Find the value of the resistor to be connected between C and D so that the resistance of the entire network between A and B becomes independent of the number of elementary sets.
- (A) R (B) $R(\sqrt{3}-1)$ (C) 3R (D) $R(\sqrt{3}+1)$



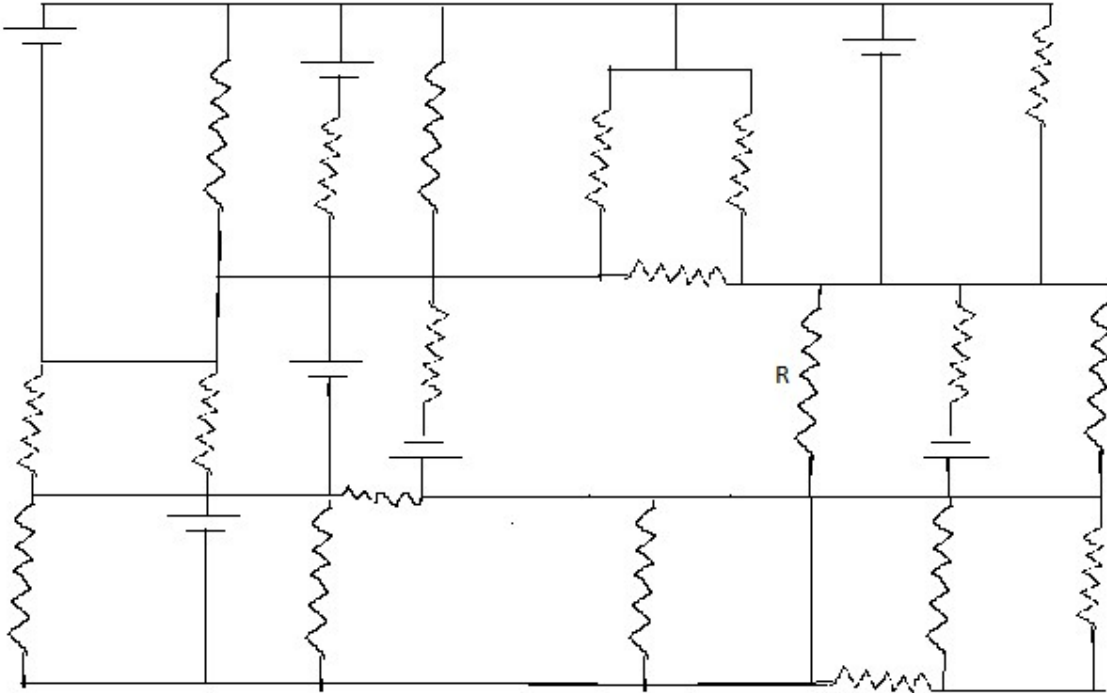
5. Sixteen resistors each of 16Ω are connected as shown. The effective resistance between A and B in ohm is
- (A) 1 (B) 2 ***(C) 3** (D) 4



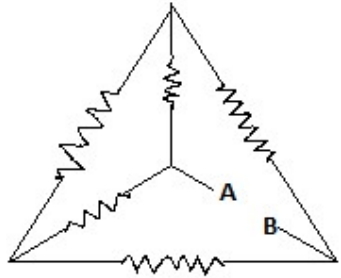
6. **(A) $V_D = 40$ volt**
- (B) The currents in AD, DB and DC are in the ratio 3: 2: 1
- (C) The currents in AD, DB and DC are in the ratio 1: 2: 3
- (D) The network draws a total power of 200 W



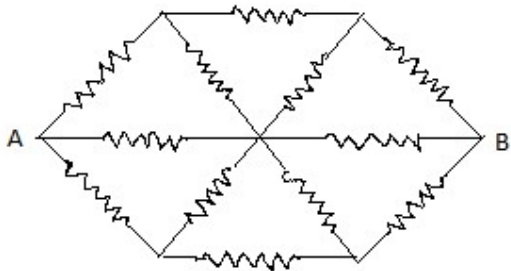
7. A potentiometer is connected between A and B and a balance is obtained at 64 cm. When the potentiometer lead is moved from B to C, the balance is found at 8 cm. If the potentiometer is now connected between B and C, balance will be found at
- (A) 8 cm **(B) 56 cm** (C) 64 cm (D) 72 cm



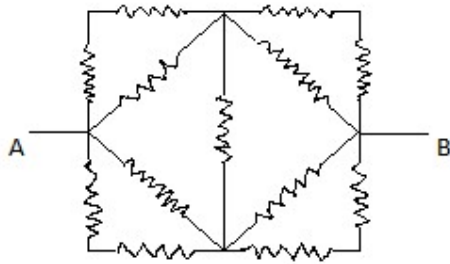
10. All the resistances in the above resistance-monster maze are of 4 ohms and the batteries (ideal) have an e.m.f of 4 V. What is the current through the resistor R?



11. If all the resistances are R, find the equivalent resistance between A and B.

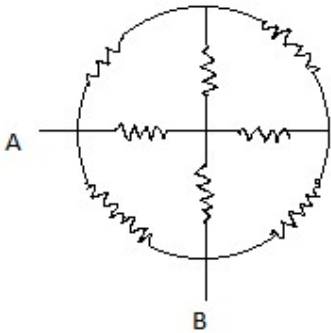


12. All the resistances shown are R ohm each. Find the equivalent resistance between A and B.



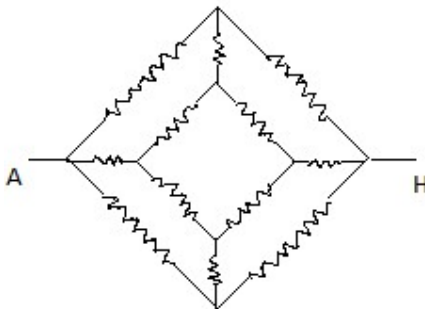
13. Thirteen resistors each of resistance R are connected as shown. Equivalent resistance between A and B is

- (a) $2R$ (b) $4R/3$ (c) $2R/3$ (d) R



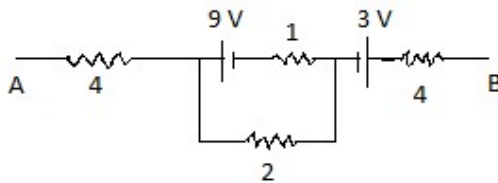
14. Eight resistances each of 5 ohms are connected as shown. Equivalent resistance between A and B is

- (a) $8/3$ (b) $16/3$ (c) $15/7$ (d) $19/2$



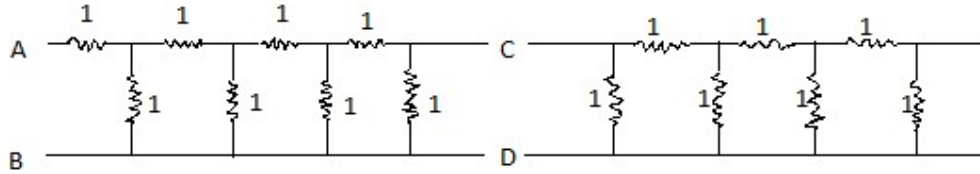
15. Twelve resistors each of resistance 1 ohm are connected as shown. Net resistance between A and H is

- (a) $5/3$ (b) 1 (c) $3/4$ (d) $7/6$



16. In the circuit shown potential difference between A and B is 16 V. The current passing through the 2 ohm resistance is

- (a) 2.5 A (b) 3.5 A (c) 4 A (d) zero



17.

In

the two circuits shown

(a) $R_{AB} = R_{CD} = (\sqrt{3} + 2)$

(b) $R_{AB} = \sqrt{3} + 1$

(c) $R_{CD} = \sqrt{5} + 1$

(d) $R_{AB} > R_{CD}$

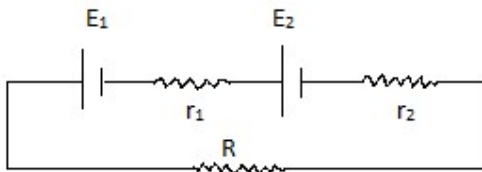
18. The length of the potentiometer wire is L . A cell of e.m.f E is balanced at a length $L/3$ from the positive end of the wire. If the length of the wire is increased by $L/2$, at what distance will the same cell give the balance point?

(a) $2L/3$

(b) $L/2$

(c) $L/6$

(d) $4L/3$



19.

Under what conditions, current passing through R

can be increased by short circuiting the battery of e.m.f E_2 . The internal resistance of the two batteries are r_1 and r_2 respectively.

(a) $E_2 r_1 > E_1 (R + r_2)$

(b) $E_1 r_2 < E_2 (R + r_1)$

(c) $E_2 r_2 < E_1 (R + r_2)$

(d) $E_1 r_1 > E_2 (R + r_1)$

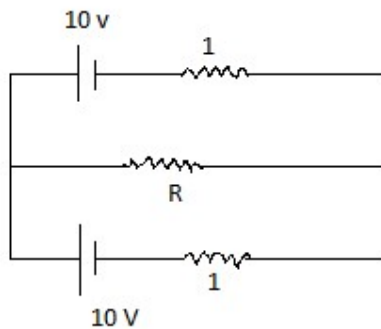
20. A cell develops the same power across two resistances R_1 and R_2 separately. The internal resistance of the cell is

(a) $R_1 + R_2$

(b) $(R_1 + R_2)/2$

(c) $\sqrt{R_1 R_2}$

(d) $\sqrt{(R_1 R_2)/2}$



21.

Maximum power developed across resistance R in the

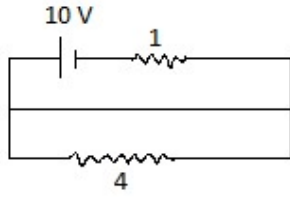
circuit shown is (use $E = \frac{\sum E}{\sum \frac{1}{r}}$ and $r = R$)

(a) 50 W

(b) 75 W

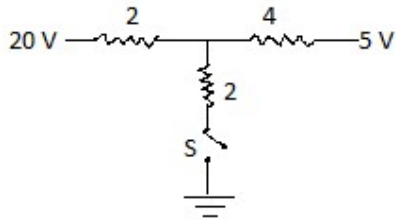
(c) 25 W

(d) 100 W



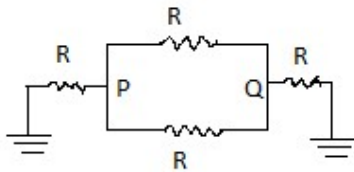
22. Potential difference across the terminals of the battery is (1 ohm is the internal resistance of the battery)

- (a) 8 V (b) 10 V (c) 6 V (d) zero



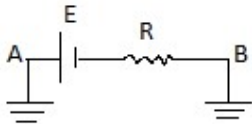
23. As the switch S is closed, what current passes through it?

- (a) 4.5 A (b) 6 A (c) 3 A (d) 0



24. What is the net resistance between P and Q?

- (a) $R/2$ (b) $2R/5$ (c) $3R/5$ (d) $R/3$



25. Select the correct alternatives.

- (a) Potential difference across A and B is zero
 (b) Potential difference across A and B is E
 (c) Current across AB is zero
 (d) Current across AB is E/R