22. Four wires of equal length and of resistances 10 *ohms* each are connected in the form of a square. The equivalent resistance between two opposite corners of the square is

(a) 10 *ohm* (b) 40 *ohm*

(c) 20 *ohm* (d) 10/4 *ohm*

23. Two resistors are connected (a) in series (b) in parallel. The equivalent resistance in the two cases are 9 *ohm* and 2 *ohm* respectively. Then the resistances of the component resistors are

(a) 2 *ohm* and 7 *ohm* (b) 3 *ohm* and 6 *ohm*

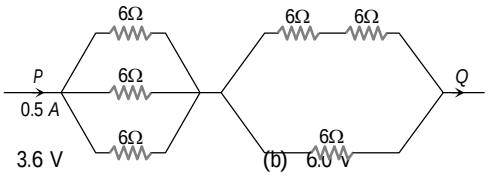
(c) 3 *ohm* and 9 *ohm* (d) 5 *ohm* and 4 *ohm*

24. Resistors of 1, 2, 3 *ohm* are connected in the form of a triangle. If a 1.5 volt cell of negligible internal resistance is connected across 3 *ohm* resistor, the current flowing through this resistance will be

(a) 0.25 *amp* (b) 0.5 *amp*

(c) 1.0 *amp* (d) 1.5 *amp*

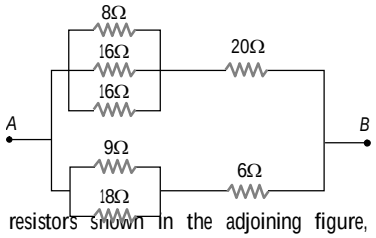
25. Resistances of 6 *ohm* each are connected in the manner shown in adjoining figure. With the current 0.5 *ampere* as shown in figure, the potential difference $V_P - V_Q$ is



(a) 3.6 V (b) 6.0 V

(c) 3.0 V (d) 7.2 V

26. The equivalent resistance of the arrangement of resistances shown in adjoining figure between the points *A* and *B* is



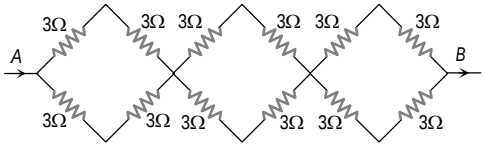
(a) 6 *ohm*

(b) 8 *ohm*

(c) 16 *ohm*

(d) 24 *ohm*

27. In the network of resistors shown in the adjoining figure, the equivalent resistance between *A* and *B* is



(a) 54 *ohm* (b) 18 *ohm*

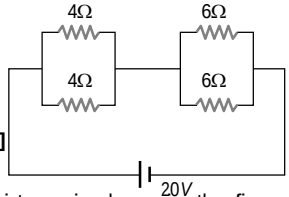
(c) 36 *ohm* (d) 9 *ohm*

28. A wire is broken in four equal parts. A packet is formed by keeping the four wires together. The resistance of the packet in comparison to the resistance of the wire will be

(a) Equal (b) One fourth

(c) One eight (d) $\frac{1}{16}th$

29. Four resistances are connected in a circuit in the given figure. The electric current flowing through 4 *ohm* and 6 *ohm* resistance is respectively



(a) 2 *amp* and 4 *amp*

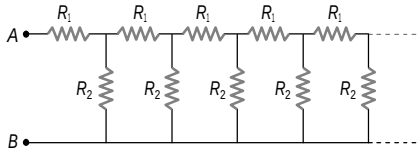
(b) 1 *amp* and 2 *amp*

(c) 1 *amp* and 1 *amp*

[CPMT 1984]

(d) 2 *amp* and 2 *amp*

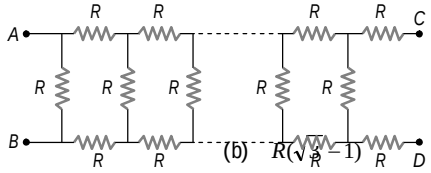
30. An infinite sequence of resistance is shown in the figure. The resultant resistance between *A* and *B* will be, when $R_1 = 1\,ohm$ and $R_2 = 2\,ohm$



(a) Infinity (b) $1\,\Omega$

(c) $2\,\Omega$ (d) $1.5\,\Omega$

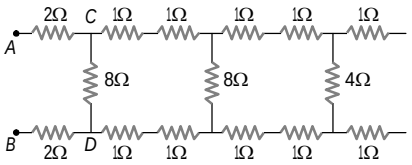
31. In the figure, the value of resistors to be connected between *C* and *D* so that the resistance of the entire circuit between *A* and *B* does not change with the number of elementary sets used is



(a) *R* (b) $R(\sqrt{3}-1)$

(c) 3 *R* (d) $R(\sqrt{3}+1)$

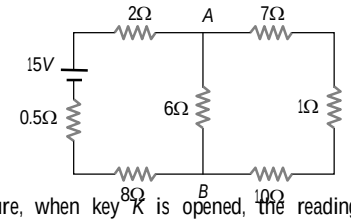
32. In the figure shown, the total resistance between *A* and *B* is



(a) $12\,\Omega$ (b) $4\,\Omega$

(c) $6\,\Omega$ (d) $8\,\Omega$

33. The current from the battery in circuit diagram shown is



(a) 1 *A*

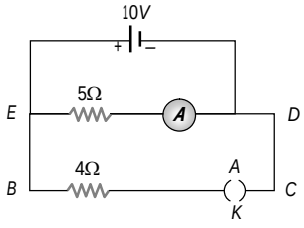
(b) 2 *A*

(c) 1.5 *A*

(d) 3 *A*

34. In the given figure, when key *K* is opened, the reading of the ammeter *A* will be

(a) 50 *A*

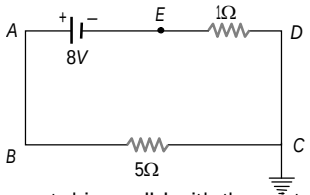


(b) 2 *A*

(c) 0.5 *A*

(d) $\frac{10}{9}A$

35. In the given circuit, the potential of the point *E* is



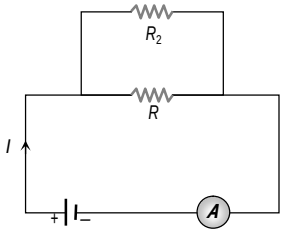
(a) Zero

(b) $-8\ V$

(c) $-4/3\ V$

(d) 4/3 *V*

36. If a resistance R_2 is connected in parallel with the resistance *R* in the circuit shown, then possible value of current through *R* and the possible value of R_2 will be



(a) $\frac{I}{3}, R$

(b) $I, 2R$

(c) $\frac{I}{3}, 2R$

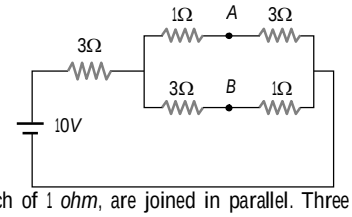
(d) $\frac{I}{2}, R$

37. Four wires *AB*, *BC*, *CD*, *DA* of resistance 4 *ohm* each and a fifth wire *BD* of resistance 8 *ohm* are joined to form a rectangle *ABCD* of which *BD* is a diagonal. The effective resistance between the points *A* and *B* is

(a) 24 *ohm* (b) 16 *ohm*

(c) $\frac{4}{3}ohm$ (d) $\frac{8}{3}ohm$

38. A battery of e.m.f. 10 *V* is connected to resistance as shown in figure. The potential difference $V_A - V_B$ between the points *A* and *B* is



(a) $-2V$

(b) $2V$

(c) $5V$

(d) $\frac{20}{11}V$

39. Three resistances, each of 1 *ohm*, are joined in parallel. Three such combinations are put in series, then the resultant resistance will be

(a) 9 *ohm* (b) 3 *ohm*

(c) 1 *ohm* (d) $\frac{1}{3}ohm$

40. A student has 10 resistors of resistance '*r*'. The minimum resistance made by him from given resistors is

(a) 10 *r* (b) $\frac{r}{10}$

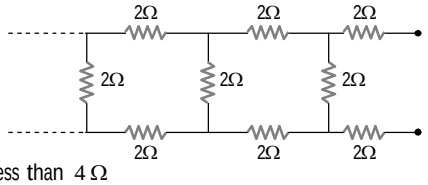
(c) $\frac{r}{100}$ (d) $\frac{r}{5}$

41. Two wires of same metal have the same length but their cross-sections are in the ratio $3:1$. They are joined in series. The resistance of the thicker wire is $10\ \Omega$. The total resistance of the combination will be **[CBSE PMT 1995]**

(a) $40\ \Omega$ (b) $\frac{40}{3}\Omega$

(c) $\frac{5}{2}\Omega$ (d) $100\ \Omega$

42. The equivalent resistance of the following infinite network of resistances is



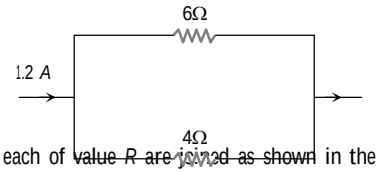
(a) Less than $4\ \Omega$

(b) $4\ \Omega$

(c) More than $4\ \Omega$ but less than $12\ \Omega$

(d) $12\ \Omega$

43. In the figure given below, the current passing through $6\ \Omega$ resistor is



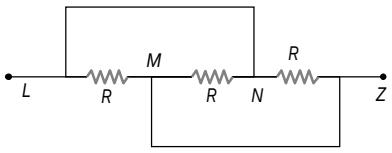
(a) 0.40 *ampere*

(b) 0.48 *ampere*

(c) 0.72 *ampere*

(d) 0.80 *ampere*

44. Three equal resistances each of value *R* are joined as shown in the figure. The equivalent resistance between *M* and *N* is



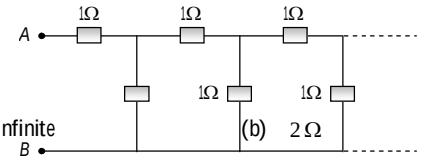
(a) *R*

(b) 2*R*

(c) $\frac{R}{2}$

(d) $\frac{R}{3}$

45. The equivalent resistance between points *A* and *B* of an infinite network of resistances each of $1\ \Omega$ connected as shown, is



(a) Infinite (b) $2\ \Omega$

(c) $\frac{1+\sqrt{5}}{2}\Omega$ (d) Zero

46. A copper wire of resistance *R* is cut into ten parts of equal length. Two pieces each are joined in series and then five such combinations are joined in parallel. The new combination will have a resistance

(a) *R* (b) $\frac{R}{4}$

(c) $\frac{R}{5}$ (d) $\frac{R}{25}$