Physicsaholics

DPP – 5 (Current Electricity)

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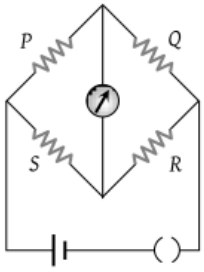
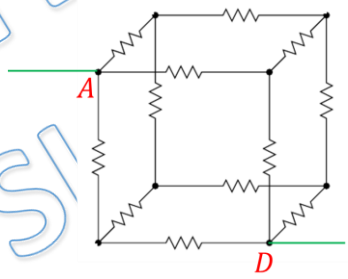
Q 1. In a Wheatstone bridge circuit $P = 2\,\Omega$, $Q = 3\,\Omega$, $R = 6\,\Omega$ and $S = 8\,\Omega$. In order to obtain balance, shunt resistance across S must be:



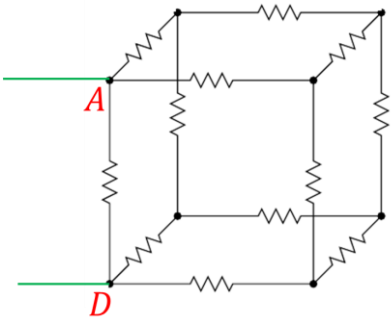
(a) $2\,\Omega$ (b) 3Ω
(c) $6\,\Omega$ (d) $8\,\Omega$

Q 2. If all the resistors are identical having resistance $\boldsymbol{R\Omega}$. Find equivalent resistance between A and D?



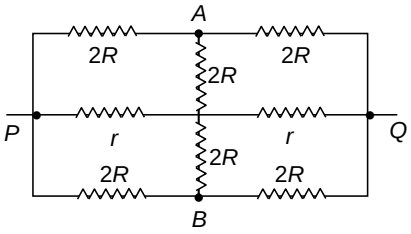
(a) $\frac{7R}{12}$ (b) $\frac{4R}{3}$
(c) $\frac{3R}{4}$ (d) $\frac{12R}{7}$

Q 3. If all the resistors are identical having resistance $\boldsymbol{R\Omega}$. Find equivalent resistance between A and D?



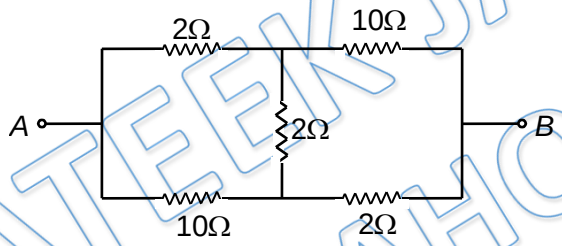
(a) $\frac{7R}{12}$ (b) $\frac{4R}{3}$
(c) $\frac{3R}{4}$ (d) $\frac{12R}{7}$

Q 4. The effective resistance between point P and Q of the electrical circuit shown in the figure is



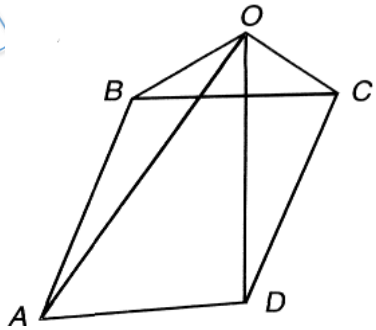
(a) $2Rr/(R+\mathrm{r})$
(b) $8\,R(R+r)/(3R+r)$
(c) $2r+4R$
(d) $5\,R/2\,R+2r$

Q 5. Find the effective resistance (in ohm) between the points A and B of the following network.



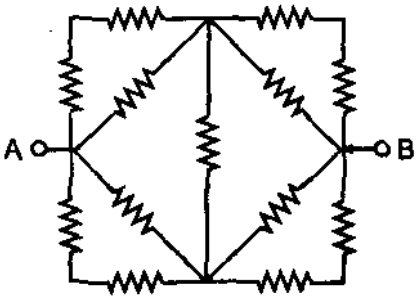
(a) 4 (b) 8
(c) 13 (d) 10

Q 6. Eight identical resistance r each are connected as shown. If equivalent resistance between AD is R_1 and that between AC is R_2 then $\frac{R_1}{R_2}$



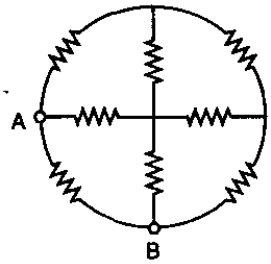
(a) 4 : 5
(b) 2 : 3
(c) 3 : 5
(d) 1 : 3

Q 7. Thirteen resistors each of resistance H are connected in the circuit as shown in figure. Net resistance between A and B is:



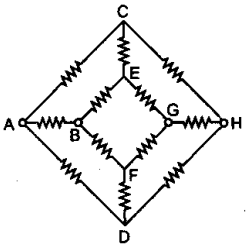
(a) 2R (b) 4R/3
(c) 2R/3 (d) R

Q 8. Eight resistances each of resistance 50Ω are connected in the circuit as shown in figure. The equivalent resistance between A and B is:



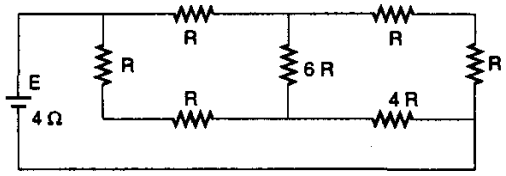
(a) $\frac{80}{3}\ \Omega$ (b) $\frac{16}{3}\ \Omega$
(c) $\frac{150}{7}\ \Omega$ (d) $\frac{19}{2}\ \Omega$

Q 9. Twelve resistors each of resistance 1 Ω are connected in the circuit shown in figure. Net resistance between points A and H would be



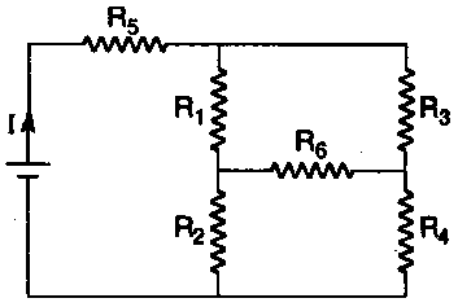
(a) $\frac{5}{3}\Omega$
(b) 1 Ω
(c) $\frac{3}{4}\Omega$
(d) $\frac{7}{6}\Omega$

Q 10. A battery of internal resistance 4Ω is connected to the network of resistances as shown. In order that the maximum power can be delivered to the network the value of R in Ω should be



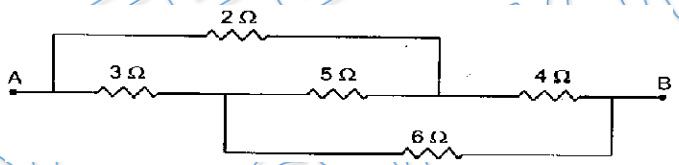
(a) $\frac{4}{9}$
(b) 2
(c) $\frac{8}{3}$
(d) 18

Q 11. In the given circuit, it is observed that the current I is independent of the value of the resistance R_6. Then, the resistance values must satisfy



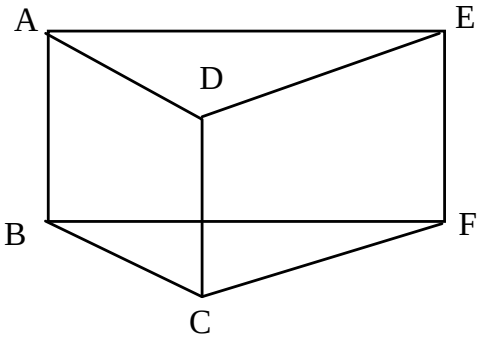
(a) $R_1R_2R_5 = R_3R_4R_6$
(b) $\frac{1}{R_5} = \frac{1}{R_G} = \frac{1}{R_1+R_2} + \frac{1}{R_3+R_4}$
(c) $R_1 R_4 = R_2 R_3$
(d) $R_1 R_3 = R_2 R_4$

Q 12. In the circuit shown, some potential difference is applied between A and B. The equivalent resistance between A and B is R.



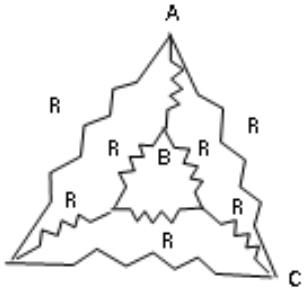
(a) No current flows through the 5-Ω resistor.
(b) R = 15Ω
(c) R = 12.5 Ω
(d) R = $\frac{18}{5}\Omega$

Q 13. Find effective resistance between A and B, if all sides of prism have equal resistance R.



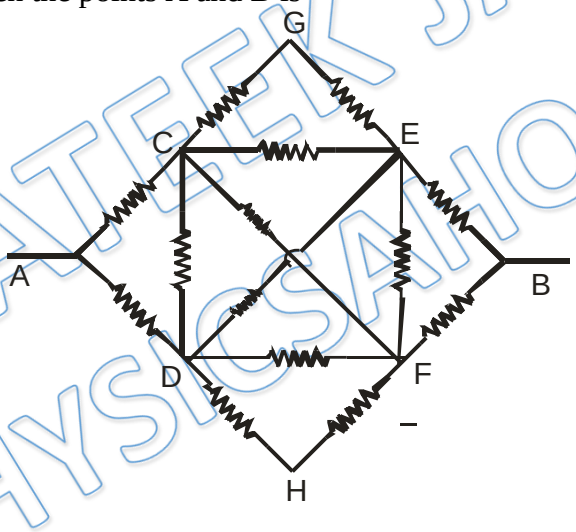
(a) 3R/5 (b) 2R/5
(c) R/5 (d) 2R

Q 14. Find effective resistance between A and B, if all sides of prism have equal resistance R.



(a) 3R/5 (b) 2R/5
(c) R/8 (d) 2R

Q 15. Fourteen identical resistors each of resistance r are connected as shown. The equivalent resistance between the points A and B is



(a) r
(b) 14 r
(c) r/14
(d) 1.2 r

Answer Key

Q.1 d	**Q.2 c**	**Q.3 a**	**Q.4 a**	**Q.5 a**
Q.6 a	**Q.7 c**	**Q.8 a**	**Q.9 c**	**Q.10 b**
Q.11 c	**Q.12 a, d**	**Q.13 a**	**Q.14 a**	**Q.15 d**