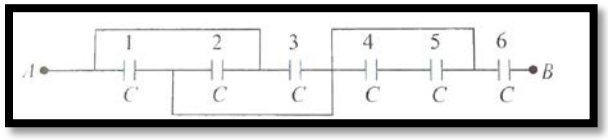
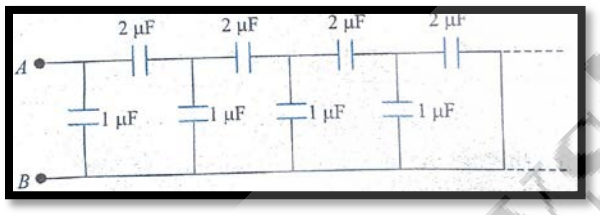
Ch—02 Electrostatic Potential and Capacitance
Daily Practice Problem 08

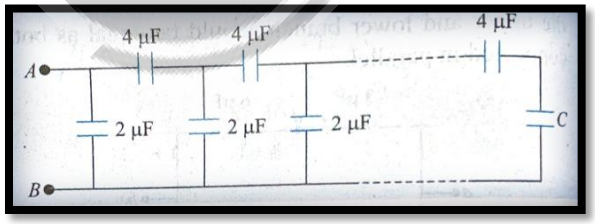
Q1. Find the equivalent capacitance between points A and B as shown in figure.



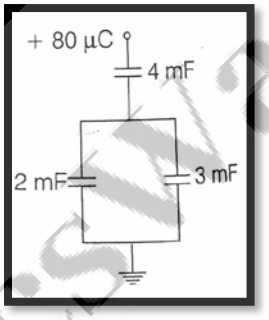
Q2. Find the equivalent capacitance of the infinite ladder shown in figure between the points A and B.



Q3. An infinite ladder is constructed by connecting several sections, of 2 μF, 4μF capacitor combinations as shown in figure, It is terminated by a capacitor of capacitance C. What value should be chosen for C such that the equivalent capacitance of the ladder between A and B becomes independent of the number of sections in between?

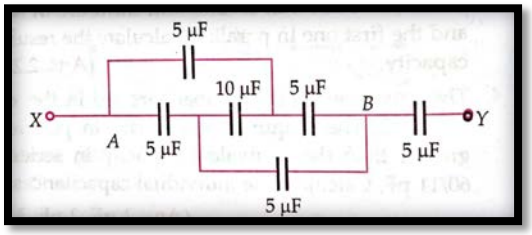


Q4. In the given circuit, a charge of +80 μC is given to the upper plate of the 4μF capacitor. Then in the steady state, the charge on the upper plate of the 3 μ F capacitor is

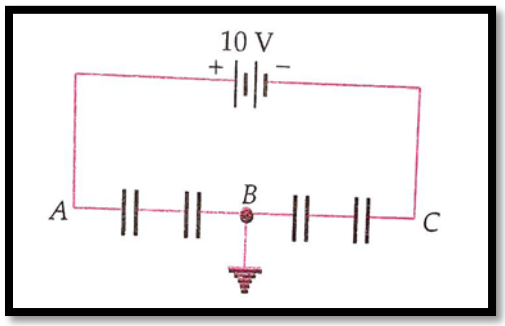


a. + 32μC
b. + 40μC
c. + 48μC
d. + 80μC

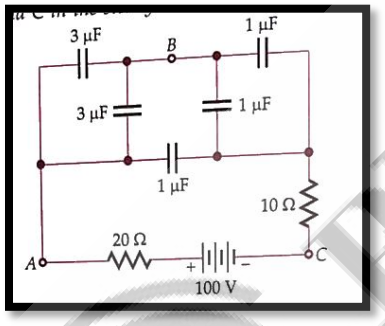
Q5. Find the resultant capacitance between the points X and Y of the combination of capacitors shown in Fig.



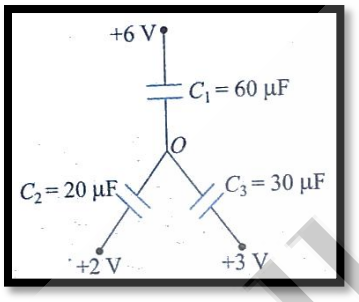
Q6. Four capacitors of equal capacitances are connected in series with a battery of 10 V, as shown in Fig. The middle point B is connected to the earth. What will be the potentials of the points A and C?



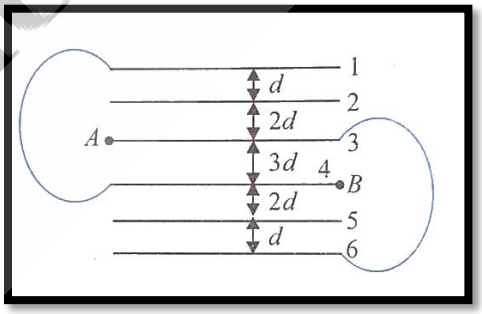
Q7. For the network shown in Fig., find the potential difference between points A and B, and that between B and C in the steady state.



Q8. Three uncharged capacitors of capacitance C_1, C_2 and C_3 are connected to one another as shown in figure. Find the potential at O.



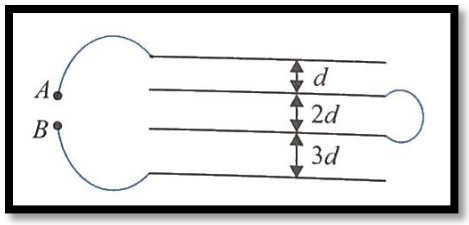
Q9. Six plates of equal area A and plate separation as shown (figure) are arranged. The equivalent capacitance between A and B is



a. $\frac{\epsilon_0 A}{d}$ **b.** $\frac{2\epsilon_0 A}{d}$

c. $\frac{3\epsilon_0 A}{d}$ **d.** $\frac{\epsilon_0 A}{4d}$

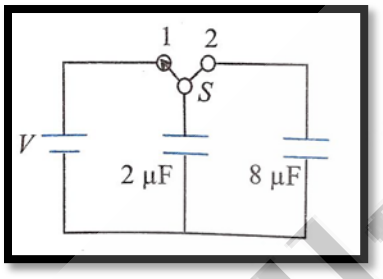
Q10. If area of each plate is A and the successive separations are d, 2d, and 3d, then the equivalent capacitance across A and B is



a. $\frac{\epsilon_0 A}{6d}$ **b.** $\frac{\epsilon_0 A}{4d}$

c. $\frac{3\epsilon_0 A}{4d}$ **d.** $\frac{\epsilon_0 A}{3d}$

Q11. A 2 μF capacitor is charged as shown in the figure. The percentage of its stored energy dissipated after switch S is turned to position 2 is



a. 0%
b. 20%
c. 75%
d. 80%

ANSWERS

1. 3C/4
2. $2\mu F$
3. $C = 4\ \mu F$
4. C
5. $2.5\ \mu C$
6. $V_A = +5V, \quad V_C = -5V$
7. $V_{AB} = 25V, \quad V_{BC} = 75\ V$
8. $V = \frac{49}{11}V$
9. a
10. b
11. d