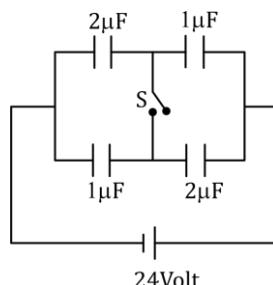
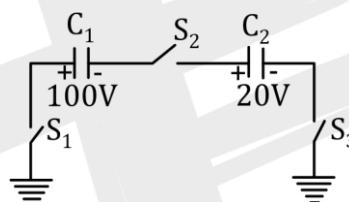


DPP - 02

- Q.1** Four uncharged capacitors are charged by 24 V battery charge flows through switch s when it is closed is $3\alpha^2 \mu\text{C}$. value of α is.

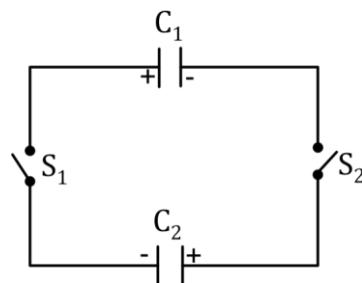


- Q.2** In the circuit shown in figure $C_1 = 1\mu\text{F}$ and $C_2 = 2\mu\text{F}$. Capacitor C_1 is charged to 100 V and C_2 to 20 volts. After charging they are connected as shown. When the switches S_1, S_2 and S_3 all are closed , the charge flow through s_1 is $10(2^{\beta-1})\mu\text{c}$. Value of β is.



- Q.3** If an electron enters into a space between the plates of a parallel plate capacitor at an angle α with the plates and leaves at angle β to the plates. The ratio of its kinetic energy while entering the capacitor to that while leaving will be: $\left[\frac{\cos\beta}{\cos\alpha}\right]^2$. Value of $p + q$ is ____

- Q.4** Two capacitors $C_1 = 2\mu\text{F}$ and $C_2 = 1\mu\text{F}$ are charged to same potential $V = 100 \text{ V}$, but with opposite polarity as shown in the Fig. The switches S_1 and S_2 are closed. The ratio of final energy to the initial energy of the system is:



(A) 1

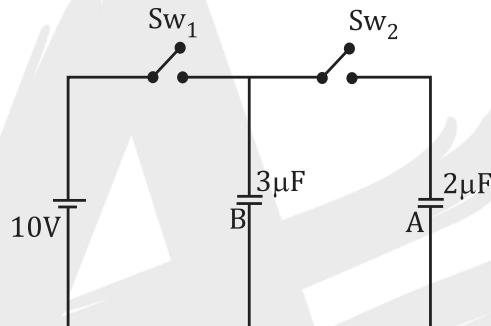
(B) $\frac{1}{2}$ (C) $1/9$ (D) $\frac{1}{4}$



Q.5 A capacitor has capacitance $10\mu F$ and it is charged to a potential 150 V. A second capacitor has a capacitance of $20\mu F$ and it is charged to a potential of 300 V. After charging, the two capacitors are connected in parallel with their same polarity plates together by using wires of negligible capacitance. Find how much energy is dissipated?

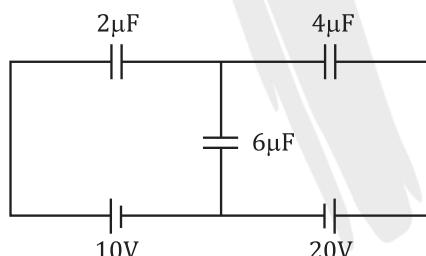
- (A) 0.075J (B) 0.0075J (C) 0.75J (D) 7.5J

Q.6 In given circuit first switch S_{W_1} is closed and S_{W_2} is open. After long time S_{W_1} is opened and S_{W_2} is closed. Calculate charge on A and B respectively in micro-coulomb.



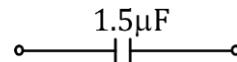
- (A) 12, 6 (B) 12, 12 (C) 6, 18 (D) 12, 18

Q.7 In the circuit shown in figure- find the charges on $6\mu F$ charge



- (A) $6\mu C$ (B) $25/3\mu C$ (C) $50\mu C$ (D) $60\mu C$

Q.8 Two capacitors of $2\mu F$ and $3\mu F$ are charged to 150 volt and 120 volt respectively. The plates of capacitor are connected as shown in the figure. A discharged capacitor of capacity $1.5\mu F$ falls to the free ends of the wire. Then:

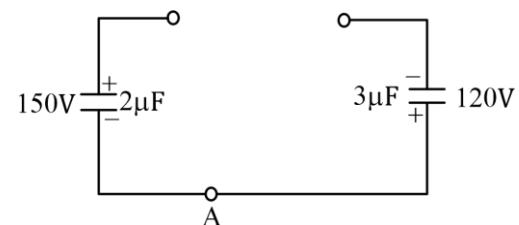


(A) charge on the $1.5\mu F$ capacitors is $180\mu C$

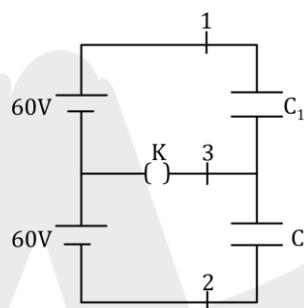
(B) charge on the $2\mu F$ capacitor is $120\mu C$

(C) charge flows through A from right to left.

(D) charge flows through A from left to right.



Q.9 In the circuit shown, the emf of each battery is 60 V and $C_1 = 2\mu F$ and $C_2 = 3\mu F$. Find the charges that will flow through the sections 3 after the key is closed.



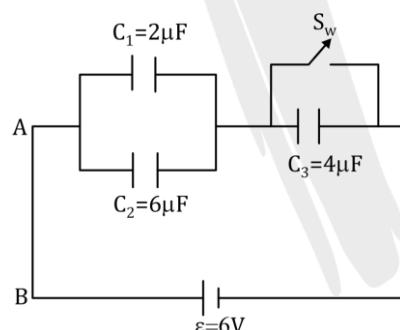
(A) $6\mu C$

(B) $60\mu C$

(C) $50\mu C$

(D) $60\mu C$

Q.10 In the given Fig., all the capacitors are in steady state initially.



What is the charge flowing through the switch when it is closed?

(A) $60\mu C$

(B) $25/3\mu C$

(C) $48\mu C$

(D) zero



ANSWER KEY

1. (2) 2. (4) 3. (2) 4. (C) 5. (A) 6. (D)
7. (C) 8. (A, B, C) 9. (B) 10. (c)

