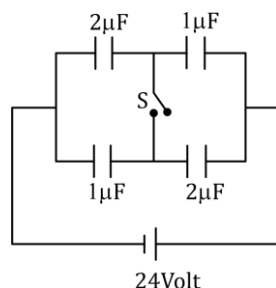
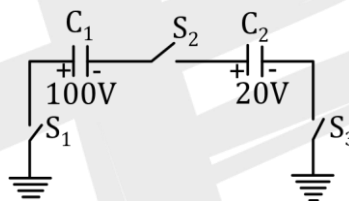


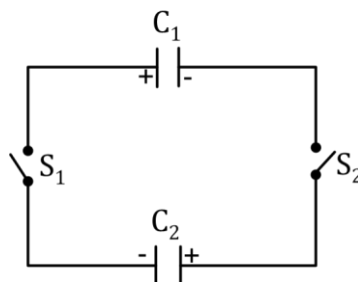
- Q.1** Four uncharged capacitors are charged by 24 V battery charge flows through switch s when it is closed is  $3\alpha^2 \mu\text{C}$ . value of  $\alpha$  is.



- 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  $\beta$  is.



- Q.3** If an electron enters into a space between the plates of a parallel plate capacitor at an angle  $\alpha$  with the plates and leaves at angle  $\beta$  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)  $\frac{1}{2}$

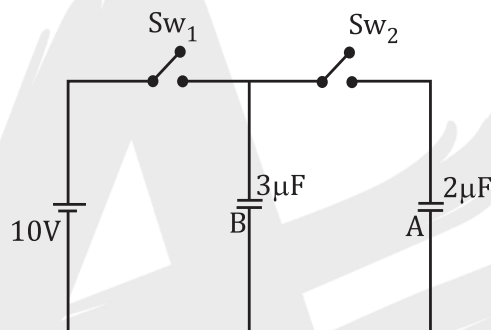
(C)  $\frac{1}{9}$

(D)  $\frac{1}{4}$

**Q.5** A capacitor has capacitance  $10\mu\text{F}$  and it is charged to a potential  $150\text{ V}$ . A second capacitor has a capacitance of  $20\mu\text{F}$  and it is charged to a potential of  $300\text{ V}$ . 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?

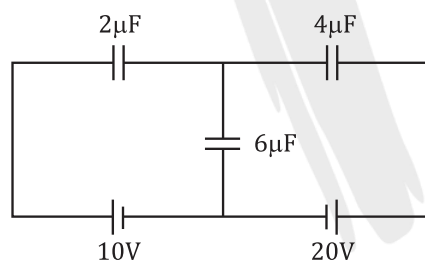
- (A)  $0.075\text{J}$  (B)  $0.0075\text{J}$  (C)  $0.75\text{J}$  (D)  $7.5\text{J}$

**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.



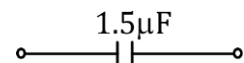
- (A)  $12, 6$  (B)  $12, 12$  (C)  $6, 18$  (D)  $12, 18$

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



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

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

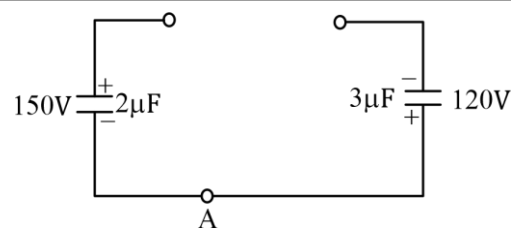


(A) charge on the  $1.5\mu\text{F}$  capacitors is  $180\mu\text{C}$

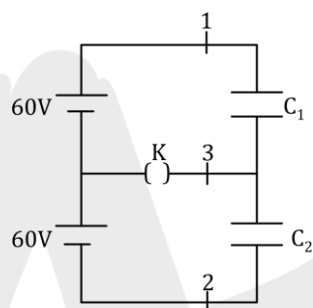
(B) charge on the  $2\mu\text{F}$  capacitor is  $120\mu\text{C}$

(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  $60\text{ V}$  and  $C_1 = 2\mu\text{F}$  and  $C_2 = 3\mu\text{F}$ . Find the charges that will flow through the sections 3 after the key is closed.



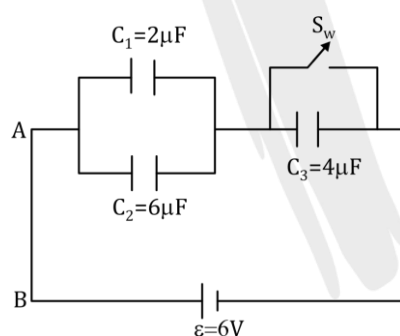
(A)  $6\mu\text{C}$

(B)  $60\mu\text{C}$

(C)  $50\mu\text{C}$

(D)  $60\mu\text{C}$

**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)  $60\mu\text{C}$

(B)  $25/3\mu\text{C}$

(C)  $48\mu\text{C}$

(D) zero

(Physics)

## CAPACITOR

## ANSWER KEY

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

A