AIPMT 2006

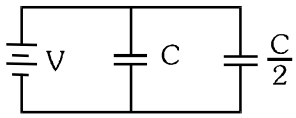
1. A parallel plate air capacitor is charged to a potential difference of V volts. After disconnecting the charging battery the distance between the plates of the capacitor is increased using an insulating handle. As a result the potential difference between the plates :-

(1) decreases (2) does not change

(3) becomes zero (4) increases

AIPMT 2007

2. Two condensers, one of capacity C and the other of capacity $\frac{C}{2}$, are connected to a V-volt battery, as shown.



The work done by battery in charging fully both the condensers is :-

(1) $\frac{1}{2}CV^2$ (2) $2\ CV^2$

(3) $\frac{1}{4}CV^2$ (4) $\frac{3}{2}CV^2$

AIPMT 2008

3. The energy required to charge a parallel plate condenser of plate separation d and plate area of cross-section A such that the uniform electric field between the plates is E, is :-

(1) $\epsilon_0 E^2 Ad$ (2) $\frac{1}{2}\epsilon_0 E^2 Ad$

(3) $\frac{1}{2}\epsilon_0 E^2/A.d$ (4) $\epsilon_0 E^2/Ad$

AIPMT 2009

4. Three capacitors each of capacitance C and of breakdown voltage V are joined in series. The capacitance and breakdown voltage of the combination will be :-

(1) 3C, 3V (2) $\frac{C}{3}, \frac{V}{3}$

(3) 3C, $\frac{V}{3}$ (4) $\frac{C}{3}$, 3V

AIPMT (Pre) 2010

5. A series combination of n_1 capacitors, each of value C_1, is charged by a source of potential difference 4V. When another parallel combination of n_2 capacitors, each of value C_2, is charged by a source of potential difference V, it has the same (total) energy stored in it, as the first combination has. The value of C_2, in terms of C_1, is then :-

(1) $\frac{16C_1}{n_1n_2}$ (2) $\frac{2C_1}{n_1n_2}$

(3) $16\frac{n_2}{n_1}C_1$ (4) $2\frac{n_2}{n_1}C_1$

AIPMT (Mains) 2010

6. Two parallel metal plates having charges + Q and – Q face each other with a certain separation between them. If the plates are now dipped in kerosene oil tank, the electric field between the plates will :-

(1) increase (2) decrease

(3) remain same (4) become zero

AIPMT(Pre) 2011 & AIPMT (Mains) 2012

7. A parallel plate condenser has a uniform electric field E (V/m) in the space between the plates. If the distance between the plates is d (m) and area of each plate is A (m^2) the energy (joules) stored in the condenser is :-

(1) E^2Ad/ϵ_0

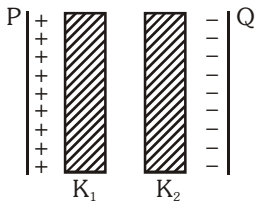
(2) $\frac{1}{2}\epsilon_0 E^2$

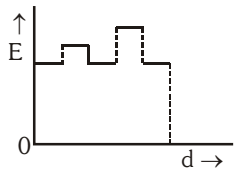
(3) $\epsilon_0 EAd$

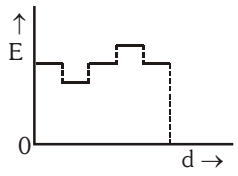
(4) $\frac{1}{2}\epsilon_0 E^2Ad$

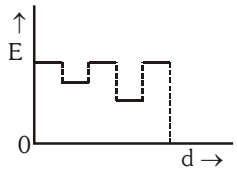
AIPMT 2014

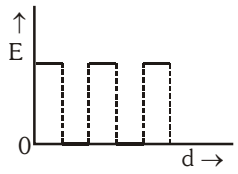
8. Two thin dielectric slabs of dielectric constants K_1 and K_2 ($K_1 < K_2$) are inserted between the plates of a parallel plate capacitor, as shown in the figure. The variation of electric field 'E' between the plates with distance 'd' as measured from plate P is correctly shown by :-



(1) 

(2) 

(3) 

(4) 

AIPMT 2015

9. A parallel plate air capacitor of capacitance C is connected to a cell of emf V and then disconnected from it. A dielectric slab of dielectric constant K, which can just fill the air gap of the capacitor, is now inserted in it. Which of the following is **incorrect** ?

(1) The energy stored in the capacitor decreases K times.

(2) The change in energy stored is $\frac{1}{2}CV^2\left(\frac{1}{K}-1\right)$.

(3) The charge on the capacitor is not conserved.

(4) The potential difference between the plates decreases K times.

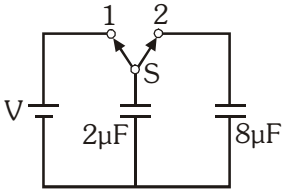
Re-AIPMT 2015

10. A parallel plate air capacitor has capacity 'C' and separation between the plates is 'd'. A potential difference 'V' is applied between the plates. Force of attraction between the plates of the parallel plate air capacitor is :-

(1) $\frac{C^2V^2}{2d^2}$ (2) $\frac{C^2V^2}{2d}$

(3) $\frac{CV^2}{2d}$ (4) $\frac{CV^2}{d}$

NEET-I 2016

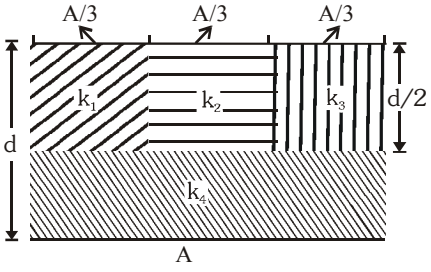
11. 

A capacitor of 2μF is charged as shown in the diagram. When the switch S is turned to position 2, the percentage of its stored energy dissipated is:

(1) 0% (2) 20% (3) 75% (4) 80%

NEET-II 2016

12. A parallel-plate capacitor of area A, plate separation d and capacitance C is filled with four dielectric materials having dielectric constants k_1, k_2, k_3 and k_4 as shown in the figure below. If a single dielectric material is to be used to have the same capacitance C in this capacitor, then its dielectric constant k is given by :-



(1) $\frac{2}{k}=\frac{3}{k_1+k_2+k_3}+\frac{1}{k_4}$

(2) $\frac{1}{k}=\frac{1}{k_1}+\frac{1}{k_2}+\frac{1}{k_3}+\frac{3}{2k_4}$

(3) $k = k_1 + k_2 + k_3 + 3k_4$

(4) $k = \frac{2}{3}(k_1 + k_2 + k_3) + 2k_4$

NEET(UG)-2017

13. A capacitor is charged by a battery. The battery is removed and another identical uncharged capacitor is connected in parallel. The total electrostatic energy of resulting system :-

(1) Decreases by a factor of 2

(2) Remains the same

(3) Increases by a factor of 2

(4) Increases by a factor of 4

NEET(UG) 2018

14. The electrostatic force between the metal plates of an isolated parallel plate capacitor C having a charge Q and area A, is :-

(1) independent of the distance between the plates.

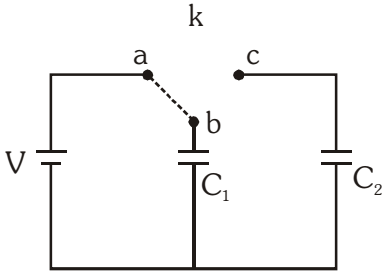
(2) linearly proportional to the distance between the plates

(3) proportional to the square root of the distance between the plates.

(4) inversely proportional to the distance between the plates.

NEET(UG) 2019 (Odisha)

15. Two identical capacitors C_1 and C_2 of equal capacitance are connected as shown in the circuit. Terminals a and b of the key k are connected to charge capacitor C_1 using battery of emf V volt. Now disconnecting a and b the terminals b and c are connected. Due to this, what will be the percentage loss of energy ?



(1) 75% (2) 0% (3) 50% (4) 25%

16. Two metal spheres, one of radius R and the other of radius 2R respectively have the same surface charge density σ. They are brought in contact and separated. What will be the new surface charge densities on them ?

(1) $\sigma_1 = \frac{5}{6}\sigma, \quad \sigma_2 = \frac{5}{2}\sigma$

(2) $\sigma_1 = \frac{5}{2}\sigma, \quad \sigma_2 = \frac{5}{6}\sigma$

(3) $\sigma_1 = \frac{5}{2}\sigma, \quad \sigma_2 = \frac{5}{3}\sigma$

(4) $\sigma_1 = \frac{5}{3}\sigma, \quad \sigma_2 = \frac{5}{6}\sigma$

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	**4**	**4**	**1**	**4**	**1**	**2**	**4**	**3**	**3**	**3**	**4**	**1**	**1**	**1**	**3**
Que.	16														
Ans.	**4**														