# Prayas JEE (2025)

Physics

Capacitor

DPP: 4

Q1 A parallel plate capacitor having air as dielectric medium is charged by a potential difference of V volt. After disconnecting the battery, the distance between the plates of the capacitor is increased using an insulated handle. As a result, potential difference between the plates
(A) Increases
(B) Does not change
(C) Becomes zero
(D) Decreases

Q2 Two parallel plates of area A are separated by two different dielectric as shown in figure. The net capacitance is
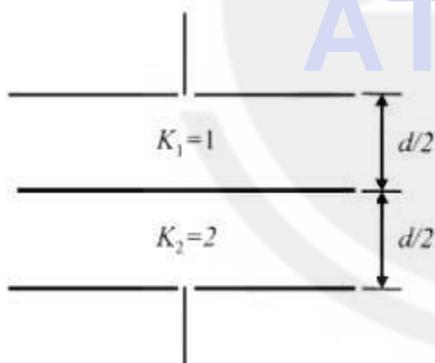
(A) $\dfrac{\varepsilon_0 A}{2d}$

(B) $\dfrac{\varepsilon_0 A}{d}$

(C) $\dfrac{3\varepsilon_0 A}{d}$

(D) $\dfrac{4\varepsilon_0 A}{3d}$

Q3 A metal foil of negligible thickness is introduced between two plates of a capacitor at the centre. The capacitance of capacitor will be
(A) Same
(B) Double
(C) Half
(D) K times

Q4 Two identical air core capacitors are connected in series to a voltage source of $15\ \mathrm{V}$. If one of the capacitors is filled with a medium of dielectric constant 4, the new potential across this capacitor is
(A) $5\ \mathrm{V}$
(B) $8\ \mathrm{V}$
(C) $3\ \mathrm{V}$
(D) $12\ \mathrm{V}$

Q5 If dielectric is inserted in charged capacitor (battery removed), then quantity that remains constant is
(A) Capacitance
(B) Potential
(C) Intensity
(D) Charge

Q6 An air parallel plate capacitor has capacity C. The capacity and distance between plates are doubled when immersed in a liquid. Then dielectric constant of the liquid is
(A) 1
(B) 2
(C) 3
(D) 4

Q7 A parallel plate air capacitor has a capacitance C. When it is half filled with a dielectric constant 5 , the percentage increase in the capacitance will be
(A) 400%
(B) 66.6%
(C) 33.3%
(D) 200%

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Q8 Two capacitors of capacitance $2\mu\mathrm{F}$ and $4\mu\mathrm{F}$ respectively are connected in series. Thecombination is connected across a potential difference of $10\ \mathrm{V}$. The ratio of energies stored by capacitors will be

(A) $1 : \sqrt{2}$

(B) $2 : 1$

(C) $1 : 4$

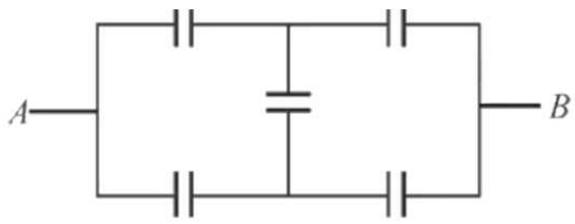(D) $4 : 1$

Q9 A slab of copper of thickness b is inserted in between the plates of parallel plate capacitor as shown in figure. The separation between the plates is d if $b = d/2$, then the ratio of capacities of capacitors after and before inserting the slab will be
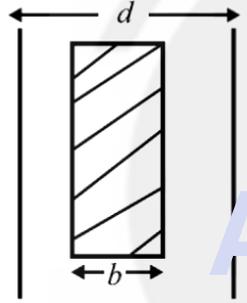
(A) $\sqrt{2} : 1$

(B) $2 : 1$

(C) $1 : 1$

(D) $1 : \sqrt{2}$

Q10 Each capacitor shown in figure is $2\mu\mathrm{F}$. Then the equivalent capacitance between points A and B is

(A) $2\mu\mathrm{F}$

(B) $4\mu\mathrm{F}$

(C) $6\mu\mathrm{F}$

(D) $8\mu\mathrm{F}$

Answer Key

Q1	**A**		**Q6**	**D**
Q2	**D**		**Q7**	**B**
Q3	**A**		**Q8**	**B**
Q4	**C**		**Q9**	**B**
Q5	**D**		**Q10**	**A**

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