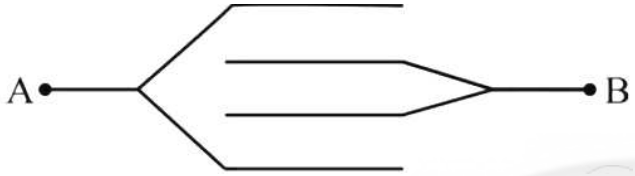
Prayas JEE (2025)

Physics

Capacitor

DPP: 3

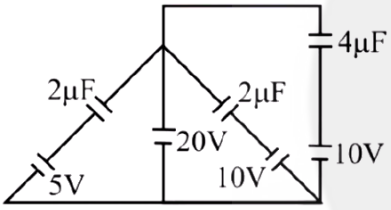
Q1 Four plates of equal area A are separated by equal distance d and are arranged as shown in the figure. The equivalent capacity is:



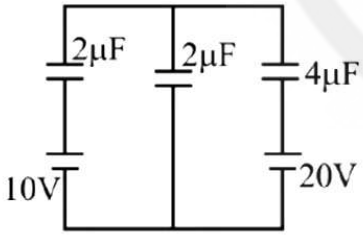
(A) $\frac{2\varepsilon_0 A}{d}$ (B) $\frac{3\varepsilon_0 A}{d}$

(C) $\frac{4\varepsilon_0 A}{d}$ (D) $\frac{\varepsilon_0 A}{d}$

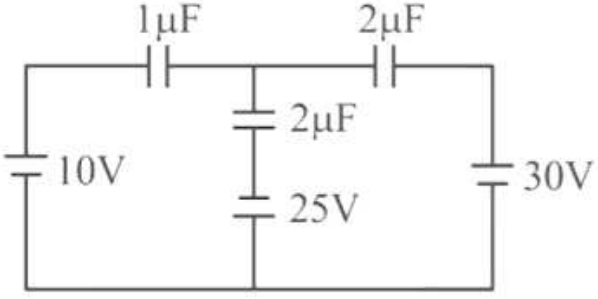
Q2 Find charge on each capacitor.



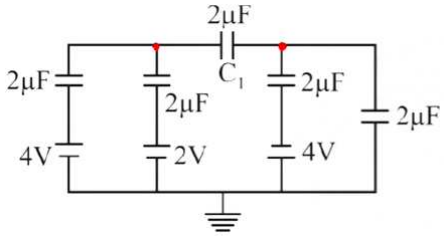
Q3 Find charge on each capacitor.



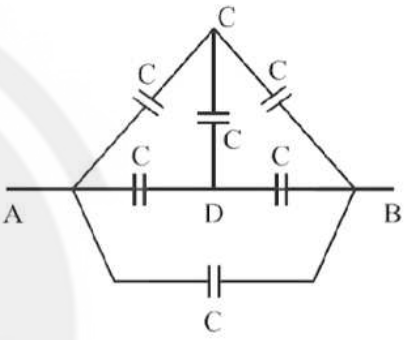
Q4 In the given circuit find out the charge on each capacitor. (Initially they are uncharged)



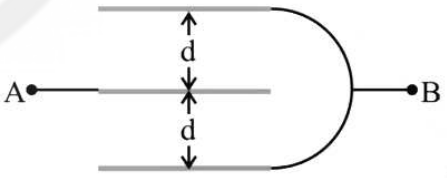
Q5 Find voltage across capacitor C_1.



Q6 Find equivalent capacitance between A and B.



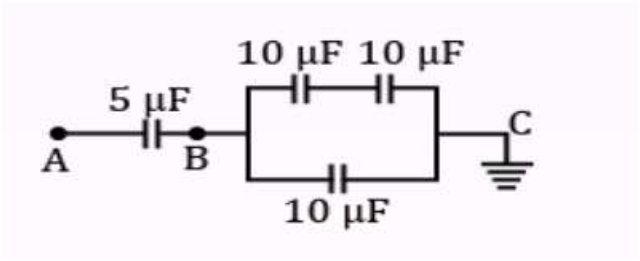
Q7 Three plates of common surface area A are connected as shown. The effective capacitance will be



(A) $\frac{\varepsilon_0 A}{d}$ (B) $\frac{3\varepsilon_0 A}{d}$

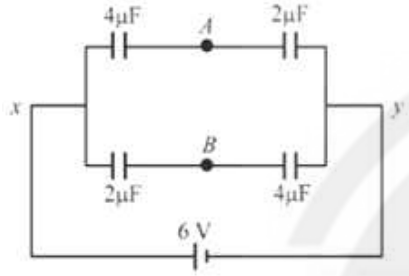
(C) $\frac{3}{2}\frac{\varepsilon_0 A}{d}$ (D) $\frac{2\varepsilon_0 A}{d}$

Q8 As shown in figure, if the point C is earthed and the point A is given a potential of $2000\ \text{V}$, then the potential at point B will be



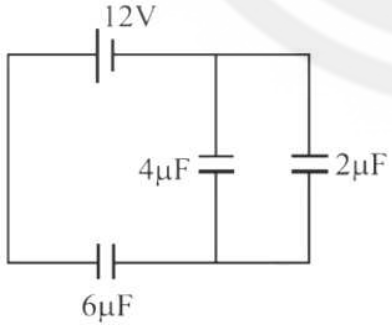
(A) $400\ \text{V}$
(B) $500\ \text{V}$
(C) $1000\ \text{V}$
(D) $1300\ \text{V}$

Q9 What is the potential difference between points A and B in the circuit shown?



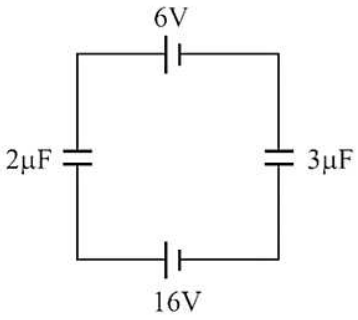
(A) $2\ \text{V}$
(B) $4\ \text{V}$
(C) $3\ \text{V}$
(D) $12\ \text{V}$

Q10 The charge deposited on $4\mu\text{F}$ capacitor in the circuit is



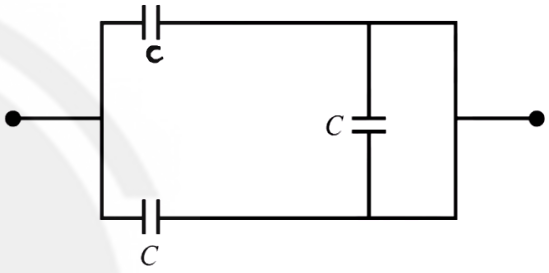
(A) $6 \times 10^{-6}\text{C}$
(B) $12 \times 10^{-6}\text{C}$
(C) $24 \times 10^{-6}\text{C}$
(D) $36 \times 10^{-6}\text{C}$

Q11 What is the potential difference across $2\ \mu\text{F}$ capacitor in the circuit shown?



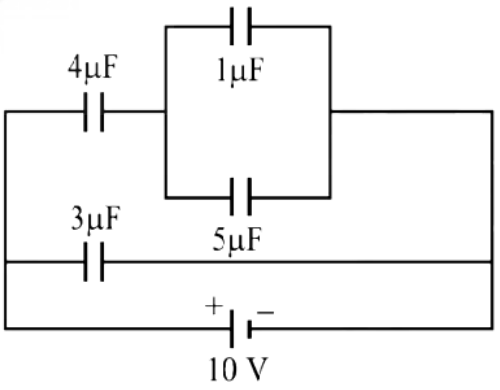
(A) $12\ \text{V}$
(B) $4\ \text{V}$
(C) $6\ \text{V}$
(D) $18\ \text{V}$

Q12 The equivalent capacitance of the combination shown in figure below is



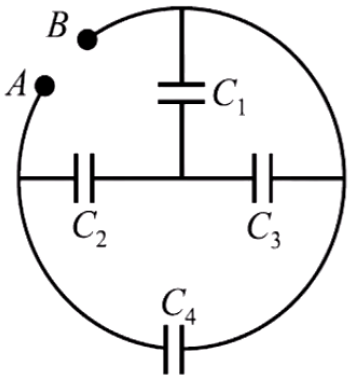
(A) $2C$
(B) C
(C) $\frac{1}{2}C$
(D) None of these

Q13 For the circuit shown in figure the charge on $4\mu\text{F}$ capacitor is



(A) $40\mu\text{C}$
(B) $30\mu\text{C}$
(C) $24\mu\text{C}$
(D) $54\mu\text{C}$

Q14 In the arrangement of capacitors shown in figure,each capacitor is of $9\mu\mathrm{F}$, Then the equivalent capacitance between in points A and B is



(A) $9\mu\mathrm{F}$

(B) $18\mu\mathrm{F}$

(C) $4.5\mu\mathrm{F}$

(D) $15\mu\mathrm{F}$

Answer Key

Q1 A

Q2 $(Q_1 = 30\,\mu C,\ Q_2 = 60\,\mu C,\ Q_3 = 40\,\mu C)$

Q3 $(Q_{C_1} = 5\,\mu C,\ Q_{C_2} = 25\,\mu C,\ Q_{C_3} = -30\,\mu C)$

Q4 $(Q_1 = 6\,\mu C,\ Q_2 = 58\,\mu C,\ Q_3 = 52\,\mu C)$

Q5 $\frac{5}{2}\ volt$

Q6 2C

Q7 D

Q8 B

Q9 A

Q10 C

Q11 C

Q12 A

Q13 C

Q14 D