

PYQSide

JEE MAIN ELECTROSTATIC POTENTIAL AND CAPACITANCE — POTENTIAL DUE TO A POINT CHARGE, SYSTEM OF CHARGES AND DIPOLE — PYQS

Max. Marks: 20

Questions: 5

Section A (MCQ)

- Q.1** There are three concentric conducting spherical shells A, B and C of radii a , b and c respectively ($c > b > a$) and they are charged with charges q_1 , q_2 and q_3 respectively. The potentials of the spheres A, B and C respectively, are :

[JEE Main 2026 (Online) 24th January Morning Shift]

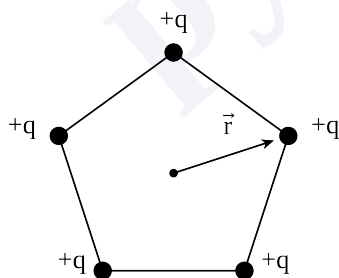
- (1) $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1}{a} + \frac{q_2}{b} + \frac{q_3}{c} \right)$, $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1 + q_2 + q_3}{b} \right)$, $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1 + q_2 + q_3}{c} \right)$ **Q.4**
- (2) $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1 + q_2 + q_3}{a} \right)$, $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1 + q_2 + q_3}{b} \right)$, $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1 + q_2 + q_3}{c} \right)$
- (3) $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1 + q_2 + q_3}{a} \right)$, $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1 + q_2}{b} + \frac{q_3}{c} \right)$, $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1}{a} + \frac{q_2}{b} + \frac{q_3}{c} \right)$
- (4) $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1}{a} + \frac{q_2}{b} + \frac{q_3}{c} \right)$, $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1 + q_2}{b} + \frac{q_3}{c} \right)$, $\frac{1}{4\pi\epsilon_0} \left(\frac{q_1 + q_2 + q_3}{c} \right)$

Scan or tap for the full solution



- Q.2** Five positive charges each having charge q are placed at the vertices of a pentagon as shown in the figure. The electric potential (V) and the electric field ($\vec{E}$) at the center O of the pentagon due to these five positive charges are :

[JEE Main 2026 (Online) 22nd January Evening Shift]



- (1) $V = \frac{5q}{4\pi\epsilon_0 r}$ and $\vec{E} = \frac{5\sqrt{3}q}{8\pi\epsilon_0 r^2} \hat{r}$
- (2) $V = \frac{5q}{4\pi\epsilon_0 r}$ and $\vec{E} = 0$
- (3) $V = 0$ and $\vec{E} = 0$
- (4) $V = \frac{5q}{4\pi\epsilon_0 r}$ and $\vec{E} = \frac{5q}{4\pi\epsilon_0 r^2} \hat{r}$

Scan or tap for the full solution



- Q.3** Three small identical bubbles of water having same charge on each coalesce to form a bigger bubble. Then the ratio of the potentials on one initial bubble and that on the resultant bigger bubble is :

[JEE Main 2026 (Online) 22nd January Evening Shift]

- (1) $1:3^{2/3}$ (2) $3^{2/3}:1$ (3) $1:3^{1/3}$ (4) $1:2^{2/3}$

Scan or tap for the full solution



A point charge of 10^{-8} C is placed at origin. The work done in moving a point charge $2 \mu\text{C}$ from point A(4, 4, 2) m to B(2, 2, 1) m is _____ J. ($\frac{1}{4\pi\epsilon_0} = 9 \times 10^9$ in SI units)

[JEE Main 2026 (Online) 21st January Morning Shift]

- (1) 30×10^{-6} (2) 0
(3) 15×10^{-6} (4) 45×10^{-6}

Scan or tap for the full solution



- Q.5** The electrostatic potential on the surface of uniformly charged spherical shell of radius $R = 10$ cm is 120 V. The potential at the centre of shell, at a distance $r = 5$ cm from centre, and at a distance $r = 15$ cm from the centre of the shell respectively, are:

[JEE Main 2025 (Online) 3rd April Morning Shift]

- (1) 0 V, 120 V, 40 V (2) 120 V, 120 V, 80 V
(3) 40 V, 40 V, 80 V (4) 0 V, 0 V, 80 V

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5					
Ans.	4	2	1	1	2					