

JEE MAIN ELECTRIC CHARGES AND FIELDS — APPLICATIONS OF GAUSS'S LAW (LINE, SHEET, SHELL) — PYQS

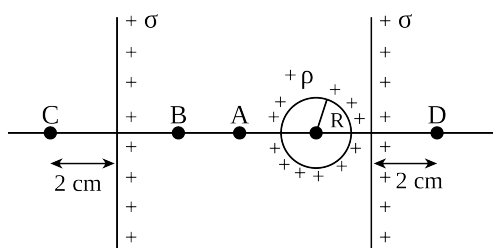
Max. Marks: 16

Questions: 4

Section A (MCQ) — 4 questions

- Q.1** Two infinite identical charged sheets and a charged spherical body of charge density ' ρ ' are arranged as shown in figure. Then the correct relation between the electrical fields at A, B, C and D points is:

[JEE Main 2025 (Online) 4th April Morning Shift]



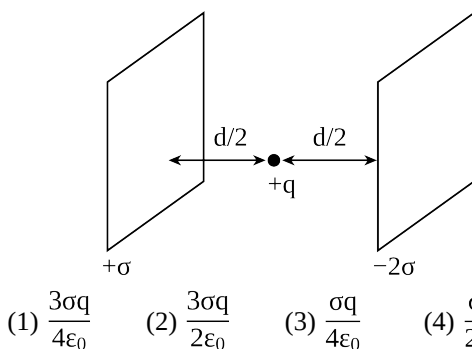
- (1) $|\vec{E}_A| = |\vec{E}_B|$; $\vec{E}_C > \vec{E}_D$
 (2) $\vec{E}_A = \vec{E}_B$; $\vec{E}_C = \vec{E}_D$
 (3) $\vec{E}_C \neq \vec{E}_D$; $\vec{E}_A > \vec{E}_B$
 (4) $\vec{E}_A > \vec{E}_B$; $\vec{E}_C = \vec{E}_D$

Scan or tap for the full solution



- Q.2** Consider two infinitely large plane parallel conducting plates as shown below. The plates are uniformly charged with a surface charge density $+\sigma$ and -2σ . The force experienced by a point charge $+q$ placed at the mid point between two plates will be:

[JEE Main 2025 (Online) 2nd April Morning Shift]

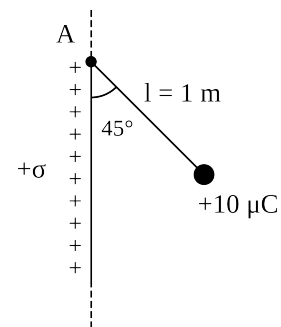


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- Q.3** A small bob of mass 100 mg and charge $+10 \mu\text{C}$ is connected to an insulating string of length 1 m. It is brought near to an infinitely long non-conducting sheet of charge density ' σ ' as shown in figure. If string subtends an angle of 45° with the sheet at equilibrium the charge density of sheet will be:
- (Given, $\epsilon_0 = 8.85 \times 10^{-12} \frac{\text{F}}{\text{m}}$ and acceleration due to gravity, $g = 10 \frac{\text{m}}{\text{s}^2}$)

[JEE Main 2025 (Online) 2nd April Morning Shift]



- (1) 1.77 nC/m^2 (2) 0.885 nC/m^2
 (3) 885 nC/m^2 (4) 17.7 nC/m^2

Scan or tap for the full solution



- Q.4** Match List - I with List - II.

List - I		List - II	
A.	Electric field inside (distance $r > 0$ from center) of a uniformly charged spherical shell with surface charge density σ , and radius R .	I.	σ/ϵ_0
B.	Electric field at distance $r > 0$ from a uniformly charged infinite plane sheet with surface charge density σ .	II.	$\sigma/2\epsilon_0$
C.	Electric field outside (distance $r > 0$ from center) of a uniformly charged spherical shell with surface charge density σ , and radius R .	III.	0

List - I		List - II	
D.	Electric field between 2 oppositely charged infinite plane parallel sheets with uniform surface charge density σ .	IV.	$\frac{\sigma R^2}{\epsilon_0 r^2}$

Choose the correct answer from the options given below :

[JEE Main 2025 (Online) 29th January Morning Shift]

(1) (A)-(IV), (B)-(I), (C)-(III), (D)-(II)

(2) (A)-(II), (B)-(I), (C)-(IV), (D)-(III)

(3) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)

(4) (A)-(IV), (B)-(II), (C)-(III), (D)-(I)

Scan or tap for the
full solution



ANSWER KEY

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