dd

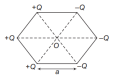
Std : 11th | Subject : Physics | Date : 25-11-2021

Total Marks : 4 | ff | Time Duration : dd

Section A

Answer the following Question. [Each carries 1 marks] **[4]**

1) Six charges are placed at the vertices of a rectangular hexagon as shown in the figure. The electric field on the line passing through pointO and perpendicular to the plane of the figure as a function of distance x from point O x a is ( )



A. 0 B. $\frac{Qa}{\pi \epsilon_0 x^3}$ C. $\frac{2Qa}{\pi \epsilon_0 x^3}$ D. $\frac{\sqrt{3}Qa}{\pi \epsilon_0 x^3}$

2) If the electric potential of the inner shell is 10 V and that of the outer shell is 5 V, then the potential at the centre will be

A. 10 V B. 5 V C. 15 V D. zero

3) A solid conducting sphere of radius a having a charge q is surrounded by a concentric conducting spherical shell of inner radius 2a and outer radius 3a as shown in figure. Find the amount of heat produced when switch is closed ($k = \frac{1}{4\pi\epsilon_0}$)

A. $\frac{kq^2}{2a}$ B. $\frac{kq^2}{3a}$ C. $\frac{kq^2}{4a}$ D. $\frac{kq^2}{6a}$

4) There are four concentric shells A ,B, C and D of radii a, 2a, 3a and 4a respectively. Shells B and D are given charges + q and − q respectively. Shell C is now earthed. The potential difference $V_A - V_C$ is ($k = \frac{1}{4\pi\epsilon_0}$)

A. $\frac{kq}{2a}$ B. $\frac{kq}{3a}$ C. $\frac{kq}{4a}$ D. $\frac{kq}{6a}$

dd

Std : 11th | Subject : Physics | Date : 25-11-2021

Total Marks : 4 | ff | Time Duration : dd

Student Name : _

Roll Number : ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

A B C D	A B C D	A B C D	A B C D	A B C D
1 ○ ○ ○ ○	11	21	31	41
2 ○ ○ ○ ○	12	22	32	42
3 ○ ○ ○ ○	13	23	33	43
4 ○ ○ ○ ○	14	24	34	44
5	15	25	35	45
6	16	26	36	46
7	17	27	37	47
8	18	28	38	48
9	19	29	39	49
10	20	30	40	50

dd

Std : 11th | Subject : Physics | Date : 25-11-2021

Total Marks : 4 | ff | Time Duration : dd

OMR ANSWER SHEET

Marks Identifier : ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○

	A B C D		A B C D		A B C D		A B C D		A B C D
1	● ○ ○ ○	11		21		31		41	
2	○ ● ○ ○	12		22		32		42	
3	○ ○ ● ○	13		23		33		43	
4	● ○ ○ ○	14		24		34		44	
5		15		25		35		45	
6		16		26		36		46	
7		17		27		37		47	
8		18		28		38		48	
9		19		29		39		49	
10		20		30		40		50	

dd

Std : 11th | Subject : Physics | Date : 25-11-2021

Total Marks : 4 | ff | Time Duration: dd

Answer Key

Section A

1) A. 0

2) B. 5 V

3) C. $\frac{kq^2}{4a}$

4) A. $\frac{kq}{2a}$