EPHY105L: Electromagnetics (Summer Term 2022-23) Mid-term
(EPHY105L)

Back

⏱ Time left 0:59:26

Question 1   Not yet answered   Marked out of 1.67   ⚑ **Flag question**

Two positive charges Q_1 and Q_2 are placed at Cartesian coordinates(-2,0,0) and (+3,0,0) respectively. For the electrostatic field to be zero at the origin, the ratio $\frac{Q_2}{Q_1}$ must be

Select one:

○ a. $\frac{9}{4}$

○ b. $\frac{4}{9}$

○ c. $\frac{3}{2}$

○ d. $\frac{2}{3}$

Next page

Back

Time left

Question 2   Not yet answered   Marked out of 1.67   ⚐ **Flag question**

Two points A and B are maintained at a potential of 7 V and -4 V respectively. The work done in moving 50 electrons from A to B is

Select one:

○ a. -8.80×10^{-17} J

○ b. 8.80×10^{-17} J

○ c. 4.40×10^{-17} J

○ d. 5.80×10^{-17} J

Previous page

Next pa

EPHY105L: Electromagnetics (Summer Term 2022-23) Mid-term

(EPHY105L)

Back

Time left 0:59:08

Question 3 Not yet answered Marked out of 1.67 ⚑ **Flag question**

100 joule of work is performed in carrying a charge of -5 coulomb from infinity to a particular point in an uniform electrostatic field. The potential of this point is

Select one:

- a. 5 V
- b. 100 V
- c. +20 V
- d. -20 V

Previous page

Next page

Time

Question 4   Not yet answered   Marked out of 1.67   ⚑ **Flag question**

For the field $\vec{F} = (Cxy + z)\,\hat{x} + 3x^2 y\,\hat{y} + xz\,\hat{z}$ to represent an electrostatic field the constant C equals

Select one:

- ○ a. 0
- ○ b. 1
- ○ c. 6
- ○ d. 3

Previous page

Ne

◀ Quiz1   Jump to...   ⌄   Le

Time left 0:58:51

Question 5   Not yet answered   Marked out of 1.67   ⚑ **Flag question**

A ring of radius 'R' has a total charge +Q uniformly distributed on it. What are the electrostatic field ($\vec{E}$) and potential (V) at the center of the ring?

Select one:

- a. $|\vec{E}| = 0, V = \frac{Q}{4\pi\epsilon_0 R}$

- b. $|\vec{E}| = 0, V = 0$

- c. $|\vec{E}| = \frac{Q}{4\pi\epsilon_0 R^2}, V = 0$

- d. $|\vec{E}| = \frac{Q}{4\pi\epsilon_0 R^2}, V = \frac{Q}{4\pi\epsilon_0 R}$

Next page

Previous page

Lec1-2 ▶

Jump to...

◀ Quiz1

Question 6

Not yet answered   Marked out of 1.67   ⚐ Flag question

Two point charges +Q and -Q are placed at points with Cartesian coordinates (1,0,0) and (-1,0,0) respectively. The force on a charge +Q kept at a point with coordinates (0,1,0) will be

Select one:

○ a. Along the -y direction

○ b. Along the -x direction

○ c. Along the +y direction

○ d. Along the +x direction

Previous page   Next page

Question 7   Not yet answered   Marked out of 1.67   ⚑ Flag question

A point charge of $\{-5\backslash epsilon\}\_0$ is located at the origin and a second point charge $+3\epsilon_0$ is placed at a point with coordinates (2,2,0). The electrostatic flux passing through a sphere centred at the origin and of radius 2.5 (all distances are in meters) is

Select one:

○ a. -2

○ b. +2

○ c. -5

○ d. +5

Previous page   Next page

(EPHY105L)

Back

Question 8   Not yet answered   Marked out of 1.67   ⚑ **Flag question**

A sphere of radius R carries a charge density given by $\rho(r) = \rho_0(1 - \frac{r^2}{R^2})$. What is the value of $\vec{\nabla}.\vec{E}$ at a point at a distance $\frac{R}{2}$ from the center?

Select one:

- a. $\frac{\rho_0}{2\epsilon_0}$
- b. Zero
- c. $\frac{\rho_0}{\epsilon_0}$
- d. $\frac{3\rho_0}{4\epsilon_0}$

Previous page

Next page

Question 9

Not yet answered   Marked out of 1.67   ⚑ Flag question

Two positive point charges of $12\mu C$ and $8\mu C$ respectively are placed 10 cm apart in air. Find the work done to bring them 4 cm closer that, they are 6 cm apart. Given the value of Coulomb's constant = $9 \times 10^9 Nm^2/(Coulomb)^2$

Select one:

○ a.   5.8 J

○ b.   4.8 J

○ c.   zero

○ d.   3.8 J

Question 10

Not yet answered   Marked out of 1.67   ⚑ **Flag question**

What is the magnitude of the electrostatic field outside two oppositely charged plane sheets of charge density σ ?

Select one:

○ a. $\frac{\sigma}{\epsilon_0}$

○ b. $\frac{\sigma}{2\epsilon_0}$

○ c. $-\frac{\sigma}{2\epsilon_0}$

○ d. 0

Previous page

◀ Quiz1   Jump to... ⌄

navigation

EPHY105L: Electromagnetics (Summer Term 2022-23) Mid-term
(EPHY105L)

Back

⊙ Time left 0:57:57

Question 11   Not yet answered   Marked out of 1.67   ⚑ Flag question

In a certain region of space the electrostatic potential is given by $V(x,y) = 2xy + 4y + 5y^2$. The electrostatic field will be zero at

Select one:

- ○ a. x=0, y=1/3
- ○ b. x=-2, y=0
- ○ c. x=+2, y=0
- ○ d. x=0, y=0

Previous page

Next page

Back

Time left 0:57:48

Question 12   Not yet answered   Marked out of 1.67   ⚑ **Flag question**

Consider a uniformly charged sphere of radius R carrying a charge +Q. In such a case divergence of the electrostatic field produced by the sphere is

Select one:

○ a.   non zero everywhere

○ b.   zero everywhere

○ c.   zero inside the sphere and non zero outside the sphere

○ d.   zero outside the sphere and non zero inside the sphere