

## Question 1

Time left 0:57:35

Not yet answered

Marked out of 2.00

Calculate the electric force acting on the charged particle if  $q=1 \cdot 10^{-4}$  C. Electric field strength  $E= 13332.3$  V/m (Inscribe in the field the only value, e.g. 1.234).

Answer:

## Question 2

Not yet answered

Marked out of 2.00

The amount of point charge placed into the closed surface is equal to  $1 \cdot 10^{-9}$  C. Electric field flux increased  $m$ -times when two more point charges of amount:  $33 \cdot 10^{-9}$  C and  $-17 \cdot 10^{-9}$  C were added to the surface. Determine, and write down the value of  $m$  into the data field (e.g. 1.234).

Answer:

**Question 3**

Not yet answered

Marked out of 2.00

Calculate the uniform electrostatic field strength, when along the field lines potential difference between two points is 0.02 V. Distance between these points equals 10 cm (inscribe in the field the value, e.g. 1,234).

Answer:

**Question 4**

Not yet answered

Marked out of 2.00

Distance between the plates of the parallel-plate capacitor is increased 8- times and the plate area is increased 20-times, therefore capacitance of the capacitor has increased by the factor K. Determine the value of K (inscribe answer in the data field, e.g.1,234).

Answer:

**Question 5**

Not yet answered

Marked out of 2.00

Calculate the energy transformed into the heat in resistance of 16 ohm during the time interval 4 s, if the current passing through is 9 A (inscribe in the field the value, e.g. 1,234).

Answer:

**Question 6**

Not yet answered

Marked out of 2.00

Calculate the magnetic flux passing through the loop area of 5 m<sup>2</sup>. Magnetic field of 3 T creates the angle of 60° to the line drawn perpendicular to the face of the loop (inscribe in the field the value, e.g. 1,234).

Answer:

## Question 7

Not yet answered

Marked out of 2.00

Determine how many times the magnetic field will be increased in the center of a circled wire carrying a current, if the radius of a wire is increased in 6 times, current through the wire is increased in 20 times (inscribe just the number into the data field, e.g. 1.234).

Answer:

## Question 8

Not yet answered

Marked out of 2.00

Charged particle moves in a magnetic field. The magnitude of magnetic field vector ( $B$ ) decreases 100 times, and the magnitude of the charge is increased in 6 times. The magnetic (Lorentz's) force exerted on a particle will be increased in ----- times (inscribe just number into the data field, e.g. 1.23).

Answer:

## Question 9

Not yet answered

Marked out of 2.00

The cyclic frequency of alternating current equals 125 Hertz and the inductance of the coil equals 2.5 Henry. Calculate the inductive reactance of the circuit (inscribe just a number into the data field, e.g. 1.23).

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Answer:

## Question 10

Not yet answered

Marked out of 1.00

Complete the definition: two point charges attract each other with the force, which is ----- (2 correct answers).

Select one or more:

- a. inversely proportional to the square of distance between them
- b. proportional to the distance between them
- c. directly proportional to the product of their charges
- d. proportional to the square of distance between them
- e. directly proportional to the sum of their charges

## Question 11

Not yet answered

Marked out of 1.00

The potential difference is defined as a measure of ----- .

- a. the power per unit charge
- b. the work done per unit charge
- c. the electric field per unit charge
- d. the force per unit charge

## Question 12

Not yet answered

Marked out of 1.00

The energy of electric field is ----- (C is the capacitance, q is the charge), select two answers.

Select one or more:

- a.  $W=CU^2/2$
- b.  $W=q^2/2C$
- c.  $W=q2C$
- d.  $W=C^2U/2$

Question **13**

Not yet answered

Marked out of 1.00

Is it true or false: "Electric dipole is the system consisting of two equal point charges of opposite sign, separated by a distance".

Select one:

- True
- False

Question **14**

Not yet answered

Marked out of 1.00

Electric Field Strength is given by an expression (q is the charge):

Select one:

- a.  $E = F/q^2$
- b.  $E = F/q$
- c.  $E = Fq$

## Question 15

Not yet answered

Marked out of 1.00

Formula  $E=E_0/\epsilon$  defines an electric field in ( $\epsilon$  is constant quantity):

- a. anisotropic dielectric
- b. vacuum
- c. homogeneous dielectric
- d. inhomogeneous dielectric

## Question 16

Not yet answered

Marked out of 1.00

44 J is used to move 4 coulombs through a potential difference of V. What is V?

Select one:

- a. 11 v
- b. 40 v
- c. 48 v
- d. 176 v
- e. 1/4 v



## Question 17

Not yet answered

Marked out of 1.00

Is it true or false: The relation between the polarization vector and electric field vector for isotropic dielectric in SI unit system is given by the formula  $\vec{P} = \chi \epsilon_0 \vec{E}$  ( $\chi$  is the coefficient of polarization).

Select one:

- True
- False

## Question 18

Not yet answered

Marked out of 1.00

The resistance R is ----- (S is the area).

Select one:

- a.  $R = \rho S / l$
- b.  $R = l / S$
- c.  $R = \rho l / S$

## Question 19

Not yet answered

Marked out of 1.00

Ohm's law in differential form is ----- (E is the electric field strength).

Select one:

- a.  $j = \sigma/E$
- b.  $j = E/\sigma$
- c.  $j = \sigma E$

## Question 20

Not yet answered

Marked out of 1.00

Is it true or false: "Joule-Lenz law determines the amount of heat liberated in a unit volume of resistor per unit time".

Select one:

- True
- False

**Question 21****Not yet answered**

Marked out of 1.00

Closed electric circuit includes a battery and a resistor, define the correct statement:

- a. electric charge is generated in resistor
- b. electric charges move through the circuit acquiring kinetic energy from the resistor
- c. resistor supplies energy
- d. battery maintains an electric potential difference across the ends of the external circuit

**Question 22****Not yet answered**

Marked out of 1.00

Which of the following is true: the magnetic field produced by a current in a long, straight wire ----- .

Select one:

- a. is directed tangent to field lines circled around the wire
- b. directed radially outward from the wire
- c. is uniform

## Question 23

Not yet answered

Marked out of 1.00

What is the direction of the force acting on a positively charged particle moving from East to West in a magnetic field directed downward?

- a. directed out of the page
- b. directed into the page
- c. directed to the left
- d. directed to the right

## Question 24

Not yet answered

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In International (SI) System the unit of magnetic field vector is:

Select one:

- a. Ohm ( $\Omega$ )
- b. Volt (V)
- c. Tesla (T)
- d. Ampere (A)

## Question 25

Not yet answered

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Two parallel wires with the same current ( $I$ ) exert forces on each other with equal magnitudes. What happens to the magnitude of this force if the value of the current in wires is doubled?

Select one:

- a. increased 4 times
- b. The magnitude is doubled
- c. The magnitude is quartered
- d. The magnitude does not change
- e. The magnitude is halved

## Question 26

Not yet answered

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Which of the following is (are) true about Lenz's law:

- (i) It obeys Newton's third Law;
- (II) It obeys the conservation of energy;
- (III) It may be used to find direction of induced current.

Select one:

- a. (I) and (II) only
- b. (II) only
- c. (I) only
- d. (I), (II) and (III)
- e. (I) and (III) only

## Question 27

Not yet answered

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According to Faraday's law of induction  $E = -d\Phi/dt$ , define the meaning of  $\Phi$ :

- a. electric potential
- b. magnetic flux
- c. phase
- d. electric strength

## Question 28

Not yet answered

Marked out of 1.00

Electric current is called the alternating current, if ----- .

- a. only direction of current is changing
- b. magnitude and direction of current are constant
- c. magnitude and direction of current are changing
- d. only magnitude of current is changing

## Question 29

Not yet answered

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The root-mean-square (effective) value of the alternating current is equal to:

- a.  $I_0 / \sqrt{2}$
- b.  $I_0 / 2$
- c.  $2 I_0$
- d.  $I_0 / 4$

## Question 30

Not yet answered

Marked out of 1.00

Choose the formula for capacitive resistance (C is the capacitance):

- a.  $R = 1/C\omega$
- b.  $R = C\omega$
- c.  $R = 2C\omega$

## Question 31

Not yet answered

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For LC circuit the resonant frequency is defined by the formula:

- a.  $\omega = \sqrt{LC}$
- b.  $\omega = 1/\sqrt{LC}$
- c.  $\omega = \sqrt{L/C}$





