exam correction of Physics 2

Part One (8pts)

In this part, the questions are questions that have several answers

Question 1

Let q and q' be two point charges separated by a distance d,

$\vec{F}_{q/q'}$ Applied by q to q':

☑ The force of electric attraction if q and q' are different in sign

☐ An electrical repulsion force when q and q' are different in sign

☑ An electrical repulsive force when q and q' are negative

☐ An electric force of attraction when q and q' are positive

☐ none of the above

Question 2

According to the following figure, determine the equation for the electric current at node A

☐ I + I$_1$ + I$_3$ = 0

☑ I -I$_1$ - I$_3$ = 0

☐ -I - I$_1$ - I$_3$ = 0

☐ I = I$_1$ - I$_3$

☑ I = I$_1$ + I$_3$
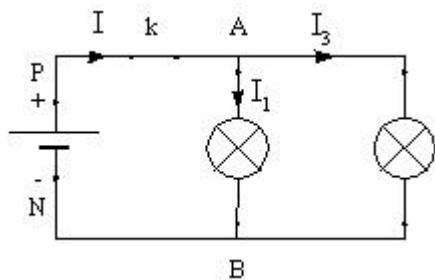
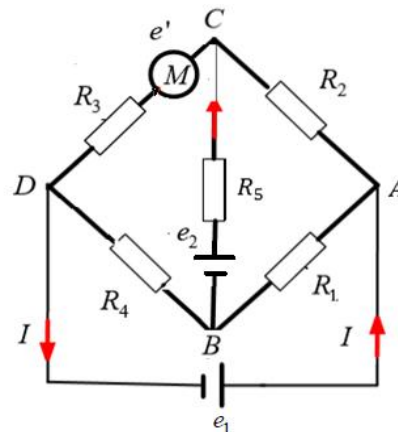**Question 3**

The unit of electrostatic field is:

☑ N/C

☑ V/m

☐ Joule

☐ none of the above

Question 4

We have the following network, what are the number of nodes and meshes:

☐ 6 knots

☑ 4 knots

☑ 3 meshes

☐ 2 meshes

Question 5

Kirchhoff's second law is:

☑ Law of conservation of energy

☑ mesh laws

☐ Law of conservation of charge

☐ law of knots

☑ $\sum_{k=1}^{n} e_k = \sum_{k=1}^{n} R_k I_k$

☐ none of the above

Question 6

Properties of a balanced electric conductor:

☑ the charge in the conductor zero

☑ The electrical potential is constant at every point

☐ The electrostatic field inside the conductor is non-zero

☑ Electrical charges accumulate on a surface of conductor

☐ none of the above

Question 7

The similarity between the laws of nature is evident in the similarity between Coulomb's law and the law of universal gravitation, which is represented in:

☑ The force in each of them is directly proportional to the product of the physical quantity

☑ The force in each is inversely proportional to the distance between them

☐ The force in each of them is only an attractive force

☐ none of the above

Part Two (12 pts)

In this part, the questions are questions that can only have one answer

Question 1

electrostatic is:

☐ The branch of physics that studies the phenomena resulting from charges in Motion condition

☐ The branch of physics that studies electrons;

☑ The branch of physics that studies phenomena resulting from charges   immobile electric;

☐ none of the above

Question 2

The proton exerts the force of electrostatic attraction on:

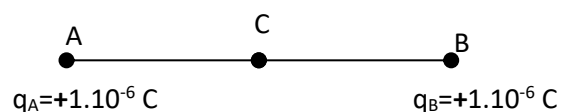☐ the light;

☑ electrons;

☐ neutron;

☐ none of the above

Question 3

What is the value of the electric field at point C in the middle of segment AB? Points A and B are 2m apart
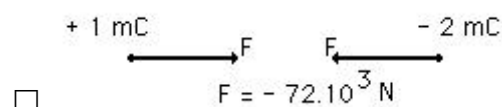
☑ zero

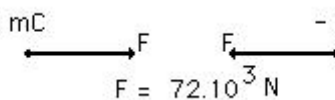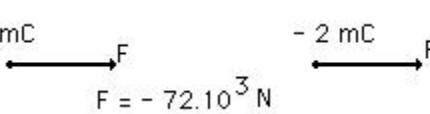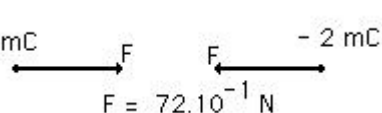☐ It is equal to 180000 N/C and its direction is from C to A

☐ It is equal to 180000 N/C and its direction is from A to C

☐ none of the above

A   C   B
q_A=+1.10^{-6} C q_B=+1.10^{-6} C

Question 4

Two charges with values of +1mC and -2mC respectively are 50cm apart. What are the electrical forces between them?

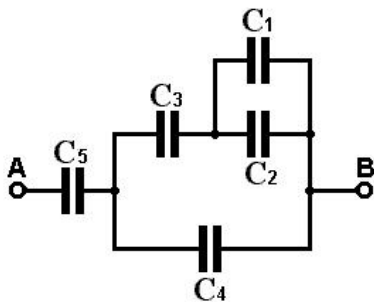+ 1 mC   − 2 mC
F   F
$F = -72.10^3$ N

☐

2

☑
```
+ 1 mC                    - 2 mC
  •———→•F      F•←———•
       F = 72.10³ N
```

☐
```
+ 1 mC                    - 2 mC
  •———→•F          •———→•F
       F = - 72.10³ N
```

☐
```
+ 1 mC                    - 2 mC
  •———→•F      F•←———•
       F = 72.10⁻¹ N
```

Question 5

What is the equivalent capacitance value for the following installation?

$C_1=1\mu F$; $C_2=2\mu F$; $C_3=6\mu F$; $C_4=4\mu F$; $C_5=12\mu F$

☐ $8\mu F$

☐ $6\mu F$

☑ $4\mu F$

☐ none of the above

Question 6

The electric potential resulting from a point charge q at a point M at a distance d is given by the following relationship:
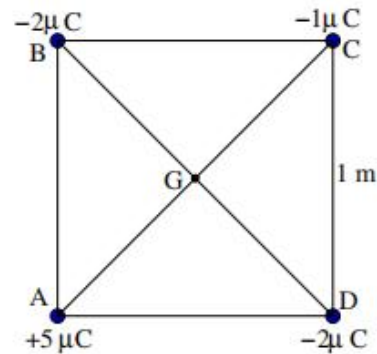
☐ $V = Kq/d^2$

☑ $V = Kq/d$

☐ $V = Kq/d\vec{u}$

☐ none of the above

Question 7

We have 4 point electric charges located at vertices

A square of side length is 1 m. Point G is the intersection of the diagonals of square ABCD

The electrical potential at point G is equal to:

☐ 108000 V

☐ −108000 V

☑ zero

☐ none of the above

Question 8

We have a voltage generator whose driving force feeds an external resistance R, if the intensity of the current passing through the resistance

How much is the resistance value?

☑ $R = 200\ \Omega$

☐ $R = 20\ \Omega$

☐ $R = 500\ \Omega$

☐ $R = 50\ \Omega$

☐ none of the above

Question 9

Let q and q' be two point charges separated by a distance d.

The expression for the intensity of the electrostatic force with which q acts on q' is:

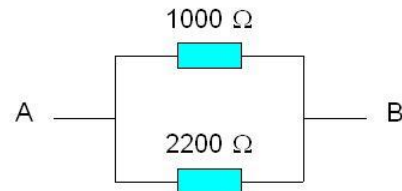☑ $K|qq'|/d^2$

☐ $|Kqq'/d|$

☐ $K|qq'|/d$

☐ none of the above

Question 10

The equivalent resistance between points A and B

  Its value:

☑ Its value is less than 1000 Ω

☐ Its value is greater than 2200 Ω

☐ confined between 1000 Ω and 2200 Ω

☐ none of the above

Question 11

A good conductor of electricity is an element:

☐ It does not have any free electrons

☐ It contains a small number of free electrons

☑ It contains a large number of free electrons

☐ none of the above

Question 12

Derive the expression for the electric field ray from the following expression for the electric potential:

☐ $\vec{E} = 18xz\vec{i} + 2x\vec{j} + 12\vec{k}$

☐ $\vec{E} = 18x^2z\vec{i} + 2y\vec{j} + 12\vec{k}$

☐ $\vec{E} = 18x^3\vec{i} + 2x\vec{j} + 12\vec{k}$

☑ none of the above

Good luck