Buon compito ☺

LICEO STATALE "CIRO CIRELLI" DI BORGO SAN CIRO
5° anno – Verifica di Fisica n. 2 – CLIL Electric Currents

Versione 0 Data Classe Alunno

Il punteggio per ogni risposta corretta è di 4 punti, per ogni risposta omessa 1 punto, per ogni risposta sbagliata 0 punti. La durata della verifica è di cinquanta minuti. **In ogni caso saranno valutate esclusivamente le risposte riportate nella tabella.**

Risposte																			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

1. When there is an electric current passing through a wire, the particles moving are:

   A electrons.
   B protons.
   C atoms.
   D ions.

   CP5201400010

2. The unit of current is:

   A ampere.
   B watt.
   C volt.
   D coulomb.

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3. A positive charge released from rest:

   A moves towards the regions of lower potential.
   B moves towards the regions of higher potential.
   C moves towards the regions of equal potential.
   D does not move.

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4. The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

   A Current.
   B Voltage.
   C Power.
   D Resistance.

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5. Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 1 at the end of the text.

   A To the right.
   B To the left.
   C Downward.
   D Upward.

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6. A battery is used to:

   A maintain a potential difference.
   B measure electric current.
   C measure electric potential.
   D safeguard against short-circuit.

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7. The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

   A potential difference.
   B current.
   C resistance.
   D power.

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8. Joule/coulomb is same as:

   A volt.
   B watt.
   C ampere.
   D ohm.

   CP5201400080

9. Complete the following statement: "The electromotive force is:

   A the maximum potential difference between the terminals of a battery".

B the force that accelerates electrons through a wire when a battery is connected to it".

C the force that accelerates protons through a wire when a battery is connected to it".

D the maximum electric potential energy stored within a battery".

CP5201400090

(10) Compute the number of electrons flowing through a battery that delivers a current of 3.0 A for 12 s.

A 2.2×10^{20}.

B 36.

C 4.8×10^{15}.

D 6.4×10^{18}.

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(11) A 10 A current is maintained in a simple circuit. Compute the net charge that passes through any point in the circuit during a 1 minute interval.

A 600 C.

B 200 C.

C 500 C.

D 400 C.

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(12) Ohm's law relates potential difference with:

A current.

B power.

C energy.

D time.

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(13) The current in a wire:

A depends on both resistance and potential difference.

B depends only on the potential difference applied.

C depends only on the resistance of the wire.

D does not depend on resistance and potential difference.

CP5202400020

(14) Determine which of the following statements does not represent Ohm's law.

A current = resistance $\times$ potential difference.

B current / potential difference = constant.

C potential difference / current = constant.

D potential difference = current $\times$ resistance.

CP5202400030

(15) The potential difference required to pass a current 0.2 A in a wire of resistance 20 Ω is:

A 4 V.

B 100 V.

C 1 V.

D 40 V.

CP5202400040

(16) The resistance of an electric bulb drawing 1.2 A current at 6.0 V is:

A 5 W.

B 0.5 W.

C 0.2 W.

D 2 W.

CP5202400050

(17) Determine which of the graphs in Figure 2 at the end of the text represents Ohm's law for a solid conductor.

A (c).

B (a).

C (b).

D (d).

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(18) The electric current as a function of voltage of a wire is presented by the graph in Figure 3. Compute the resistance of the wire.

A 1.7 Ω.

B 1 Ω.

C 0.8 Ω.

D 0.4 Ω.

CP5202400070

(19) The unit of resistivity is:

A ohm·m.

B ohm.

C ohm/m.

D ohm/m^2.

CP5203400010

(20) The resistivity of a wire depends on:

A material.

B length.

C area of cross-section.

D length, material and area of cross-section.

CP5203400020

(21) A wire of length L and cross-sectional area A has a resistivity ρ. Determine which of the following formulas can be used to calculate the resistance of the wire.

A $R = \dfrac{\rho L}{A}$.

B $R = \dfrac{\rho A}{L}$.

C $R = \dfrac{L}{\rho A}$.

D $R = \dfrac{A}{\rho L}$.

CP5203400030

(22) All of the wires in Figure 4 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (b).

B (a).

C (c).

D (d).

CP5203400040

(23) Two copper wires have the same cross-sectional area but have different lengths. Wire X has a length L and wire Y has a length $2L$. The ratio between the resistance of wire Y and wire X is:

A $\frac{R_Y}{R_X} = \frac{2}{1}$.

B $\frac{R_Y}{R_X} = \frac{1}{1}$.

C $\frac{R_Y}{R_X} = \frac{1}{2}$.

D $\frac{R_Y}{R_X} = \frac{1}{4}$.

CP5203400050

(24) Two aluminum wires have the same length and different cross-sectional area. Wire B has twice the radius of that of wire A. Determine how the resistance of wire B compares to the resistance of wire A.

A $\frac{R_B}{R_A} = \frac{1}{4}$.

B $\frac{R_B}{R_A} = \frac{1}{1}$.

C $\frac{R_B}{R_A} = \frac{1}{2}$.

D $\frac{R_B}{R_A} = \frac{2}{1}$.

CP5203400060

(25) The unit of electric power is:

A watt.

B ampere.

C volt.

D joule.

CP5204400010

(26) If D is the intensity of current circulating in a conductor and P is the voltage across the conductor, the power dissipated is described by the formula:

A $D \cdot P$.

B $D^2 \cdot P$.

C $D \cdot P^2$.

D D^2/P.

CP5204400020

(27) If D is the intensity of current circulating in a resistor with resistance F, the power dissipated by the resistor is described by the formula:

A $D^2 \cdot F$.

B $D \cdot F$.

C $D \cdot F^2$.

D D^2/F.

CP5204400030

(28) When a current I flows through a resistance R for time t the electrical energy spent is given by:

A I^2Rt.

B IRt.

C IR^2t.

D I^2R/t.

CP5204400040

(29) Heat produced in a current carrying wire in 5s is 60 J. The same current is passed through another wire of half the resistance. The heat produced in 5 s will be:

A 30 J.

B 60 J.

C 15 J.

D 120 J.

CP5204400050

(30) The electric current as a function of voltage of a wire is presented by the graph in Figure 3. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 15 W.

B 5 W.

C 10 W.

D 20 W.

CP5204400060

(31) Determine which one of the following statements concerning resistors in series is *true*.

A The current through each resistor is the same.

B The voltage across each resistor is the same.

C The power dissipated by each resistor is the same.

D The total current through the resistors is the sum of the current through each resistor.

CP5205400010

(32) Determine which one of the following statements concerning resistors in parallel is *true*.

A The voltage across each resistor is the same.

B The current through each resistor is the same.

C The power dissipated by each resistor is the same.

D The total voltage across the resistors is the sum of the voltage across each resistor.

CP5205400020

(33) Two resistances of 100 Ω and zero ohm are connected in parallel. The overall resistance will be:

A 0 Ω.

B 100 Ω.

C 50 Ω.

D 25 Ω.

CP5205400030

34 Two resistances of 100 Ω and zero ohm are connected in series. The overall resistance will be:

A 100 Ω.

B 50 Ω.

C 25 Ω.

D 0 Ω.

CP5205400040

35 Three resistors 2 Ω , 3 Ω and 4 Ω are connected so that the equivalent resistance is 9 Ω. The resistors are connected:

A all in series.

B all in parallel.

C 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.

D 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

CP5205400050

36 In Figure 5 at the end of the text,

A 3 Ω , 6 Ω are in parallel and 9 Ω is in series.

B 6 Ω, 3 Ω and 9 Ω are in series.

C 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω.

D 3 Ω , 6 Ω and Ω are in parallel.

CP5205400060

37 In Figure 6 at the end of the text, the resistance across *AB* is:

A 1 Ω.

B 4 Ω.

C 2 Ω.

D 0.5 Ω.

CP5205400070

38 Three equal resistances when combined in series are equivalent to 90 Ω. Their equivalent resistance when combined in parallel will be:

A 10 Ω.

B 270 Ω.

C 30 Ω.

D 810 Ω.

CP5205400080

39 Two resistors $R_1 = 3\ \Omega$ and $R_2 = 6\ \Omega$ are connected in parallel. Compute the net resistance in the circuit.

A 2 Ω.

B 1 Ω.

C 3 Ω.

D 6 Ω.

CP5205400090

40 Two resistors $R_1 = 6\ \Omega$ and $R_2 = 12\ \Omega$ are connected in parallel to each other and in series to $R_2 = 2\ \Omega$. Compute the net resistance in the circuit.

A 6 Ω.

B 1 Ω.

C 3 Ω.

D 2 Ω.

CP5205400100

41 Text 1. State which of the following best defines a closed circuit.

A Does not allow the electricity or electrons to flow through the wires, a switch is off.

B Does not allow the electricity or electrons to flow through the wires, a switch is on.

C Does allow the electricity or electrons to flow through the wires, a switch is on.

D Does allow the electricity or electrons to flow through the wires, a switch is off.

CP5209400010

42 Text 1. State which of the following circuits have different amounts of electricity flowing through them.

A Parallel circuits.

B Closed circuits.

C Open circuits.

D Series circuits.

CP5209400020

43 Text 1. State which of the following is the system connecting power plants across the country.

A Transformer.

B Power grid.

C Meter.

D Transmission line.

CP5209400030

44 Text 1. State which of the following is used to measure electricity used by a home or business.

A Voltage.

B Meter.

C Battery.

D Conductor.

CP5209400040

45 Text 1. All of the following are examples of conductors except:

A Water.

B Glass.

C Aluminum.

D Copper.

CP5209400050

46 Text 1. All of the following are examples of insulators except:

A Rubber.

B Porcelain.

C Plastic.

D Trees.

CP5209400060

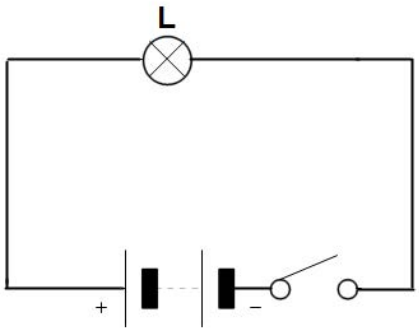

Figura 1

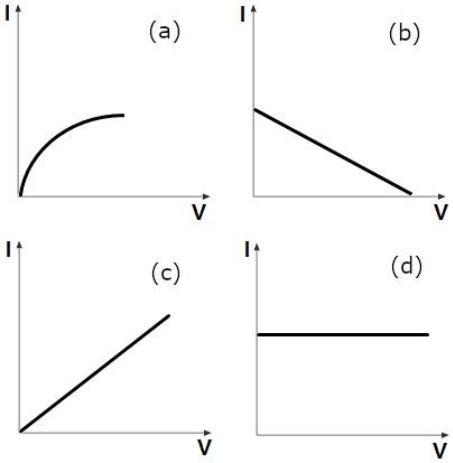

Figura 2

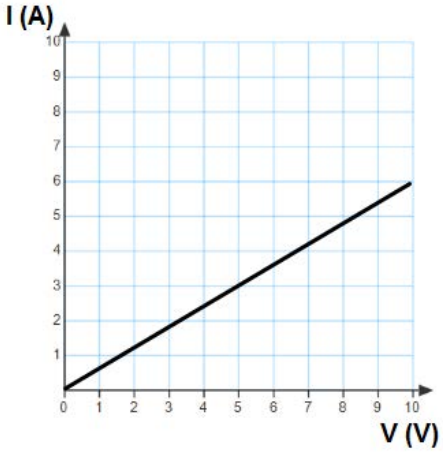

Figura 3

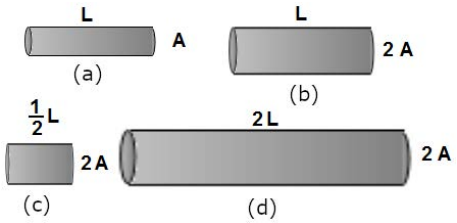

Figura 4

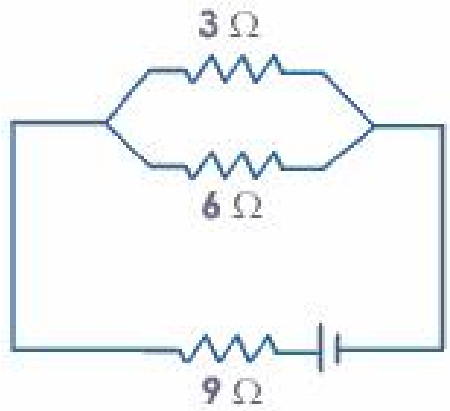

Figura 5

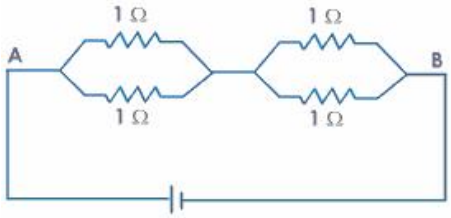

Figura 6