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.

(2) The unit of current is:

- [A] ampere.
- [B] watt.
- [C] volt.
- [D] coulomb.

(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.

(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.

(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.

(6) A battery is used to:

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

(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.

(8) Joule/coulomb is same as:

- [A] volt.
- [B] watt.
- [C] ampere.
- [D] ohm.

(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".

(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}.

(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.

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

A current.

B power.

C energy.

D time.

(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.

(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.

(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.

(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.

(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).

(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.

(19) The unit of resistivity is:

A ohm·m.

B ohm.

C ohm/m.

D ohm/m^2.

(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.

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

(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).

(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 $\dfrac{R_Y}{R_X} = \dfrac{2}{1}$.

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

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

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

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

(25) The unit of electric power is:

A watt.

B ampere.

C volt.

D joule.

(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.

(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.

(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.

(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.

(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.

(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.

(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.

(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.

(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.

(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.

(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.

(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.

(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.

(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.

(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.

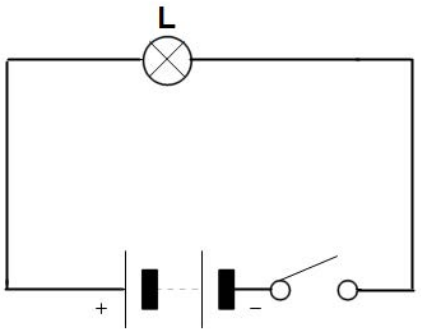


Figura 1

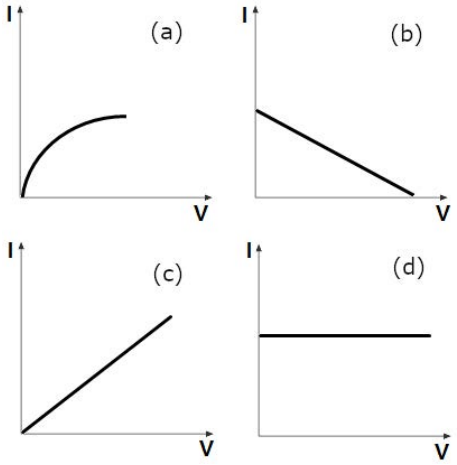


Figura 2

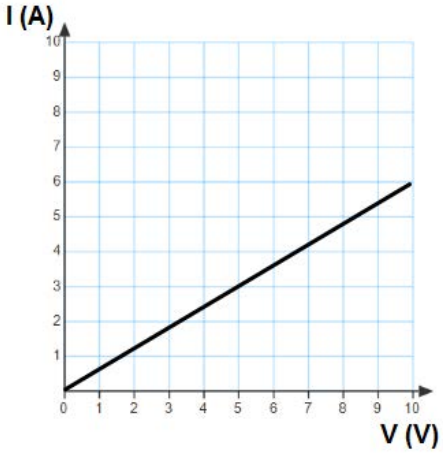


Figura 3

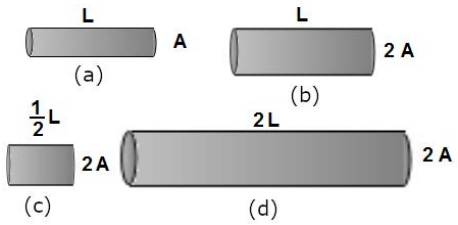


Figura 4

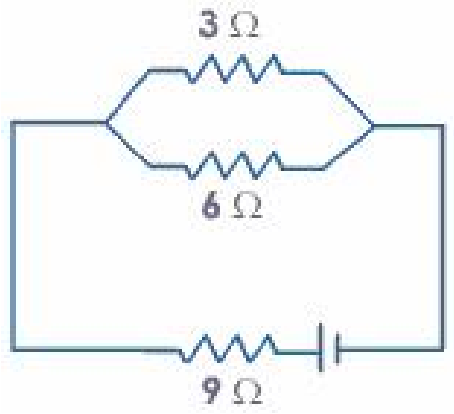


Figura 5

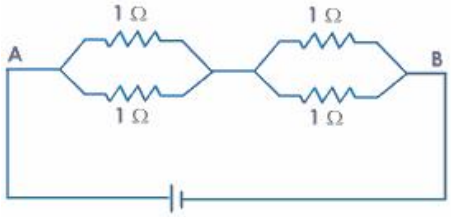


Figura 6

Buon compito ☺

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

Versione 1 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) The unit of current is:

- [A] ampere.
- [B] watt.
- [C] volt.
- [D] coulomb.

(2) The current in a wire:

- [A] depends only on the potential difference applied.
- [B] depends on both resistance and potential difference.
- [C] depends only on the resistance of the wire.
- [D] does not depend on resistance and potential difference.

(3) In Figure 1 at the end of the text,

- [A] 6 Ω, 3 Ω and 9 Ω are in series.
- [B] 3 Ω , 6 Ω and Ω are in parallel.
- [C] 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω.
- [D] 3 Ω , 6 Ω are in parallel and 9 Ω is in series.

(4) 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] $D \cdot F$.
- [B] D^2/F.
- [C] $D \cdot F^2$.
- [D] $D^2 \cdot F$.

(5) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

- [A] Power.
- [B] Resistance.
- [C] Current.
- [D] Voltage.

(6) 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] 1 Ω.
- [B] 3 Ω.
- [C] 6 Ω.
- [D] 2 Ω.

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

- [A] 2 W.
- [B] 0.2 W.
- [C] 5 W.
- [D] 0.5 W.

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

- [A] 6 Ω.
- [B] 3 Ω.
- [C] 1 Ω.
- [D] 2 Ω.

(9) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 2 at the end of the text.

- [A] To the left.
- [B] To the right.
- [C] Upward.
- [D] Downward.

(10) 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 $D \cdot P^2$.

C D^2/P.

D $D^2 \cdot P$.

(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 500 C.

B 600 C.

C 400 C.

D 200 C.

(12) 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 $\frac{R_Y}{R_X} = \frac{1}{4}$.

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

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

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

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

A 4.8×10^{15}.

B 36.

C 6.4×10^{18}.

D 2.2×10^{20}.

(14) When there is an electric current passing through a wire, the particles moving are:

A atoms.

B protons.

C ions.

D electrons.

(15) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A potential difference.

B power.

C current.

D resistance.

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

A 100 Ω.

B 0 Ω.

C 25 Ω.

D 50 Ω.

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

A current = resistance × potential difference.

B potential difference / current = constant.

C potential difference = current × resistance.

D current / potential difference = constant.

(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.

(19) 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 (a).

B (d).

C (b).

D (c).

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

A 30 Ω.

B 10 Ω.

C 270 Ω.

D 810 Ω.

(21) 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.

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

A time.

B current.

C power.

D energy.

(23) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

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

(24) Complete the following statement: "The electromotive force is:

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

[B] the maximum electric potential energy stored within a battery".

[C] the maximum potential difference between the terminals of a battery".

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

(25) Determine which of the graphs in Figure 5 at the end of the text represents Ohm's law for a solid conductor.

[A] (d).

[B] (c).

[C] (b).

[D] (a).

(26) 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] 20 W.

[B] 15 W.

[C] 10 W.

[D] 5 W.

(27) In Figure 6 at the end of the text, the resistance across AB is:

[A] 2 Ω.

[B] 0.5 Ω.

[C] 1 Ω.

[D] 4 Ω.

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

[A] The power dissipated by each resistor is the same.

[B] The current through each resistor is the same.

[C] The voltage across each resistor is the same.

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

(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] 15 J.

[C] 60 J.

[D] 120 J.

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

[A] The voltage across each resistor is the same.

[B] The current through each resistor is the same.

[C] The total current through the resistors is the sum of the current through each resistor.

[D] The power dissipated by each resistor is the same.

(31) A battery is used to:

[A] safeguard against short-circuit.

[B] maintain a potential difference.

[C] measure electric current.

[D] measure electric potential.

(32) 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] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

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

[D] all in parallel.

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

[A] IRt.

[B] IR^2t.

[C] I^2Rt.

[D] I^2R/t.

(34) The resistivity of a wire depends on:

[A] area of cross-section.

[B] length.

[C] length, material and area of cross-section.

[D] material.

(35) 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] $R = \dfrac{L}{\rho A}$.

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

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

(36) Joule/coulomb is same as:

[A] ohm.

[B] watt.

[C] volt.

[D] ampere.

(37) A positive charge released from rest:

[A] moves towards the regions of higher potential.

[B] moves towards the regions of equal potential.

[C] moves towards the regions of lower potential.

[D] does not move.

38 The unit of resistivity is:

A ohm/m.

B ohm.

C ohm/m^2.

D ohm·m.

39 The unit of electric power is:

A ampere.

B joule.

C volt.

D watt.

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

A 50 Ω.

B 0 Ω.

C 25 Ω.

D 100 Ω.

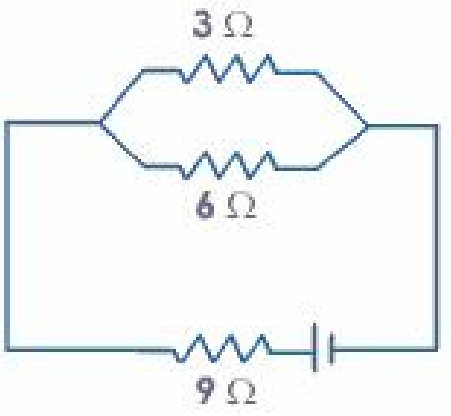


Figura 1

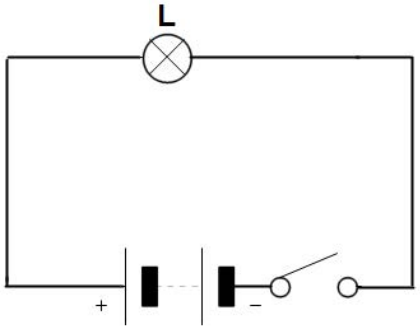


Figura 2

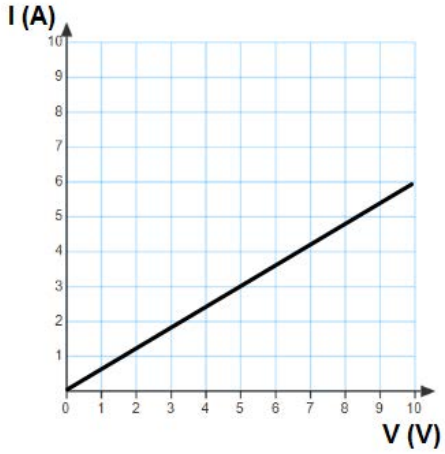


Figura 3

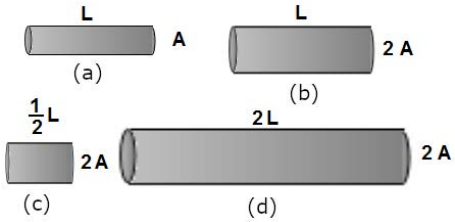


Figura 4

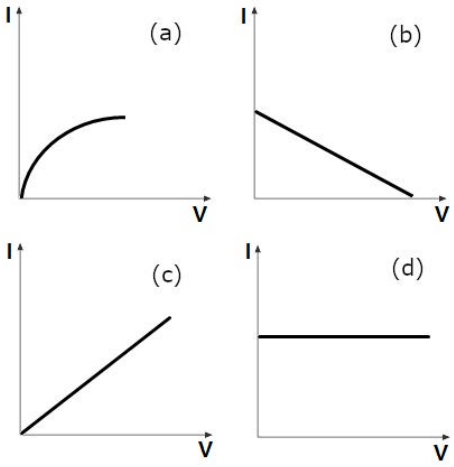


Figura 5

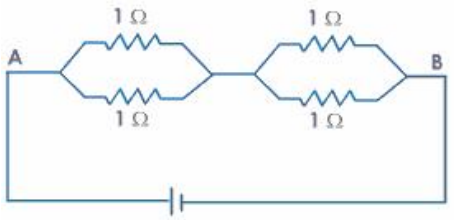


Figura 6

Buon compito ☺

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

Versione 2 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) 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.

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

[A] 25 Ω.
[B] 100 Ω.
[C] 0 Ω.
[D] 50 Ω.

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

[A] 30 Ω.
[B] 10 Ω.
[C] 270 Ω.
[D] 810 Ω.

(4) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the power dissipated in the resistor when the applied voltage is 5 V.

[A] 5 W.
[B] 10 W.
[C] 15 W.
[D] 20 W.

(5) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

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

(6) In Figure 2 at the end of the text, the resistance across *AB* is:

[A] 2 Ω.
[B] 1 Ω.
[C] 0.5 Ω.
[D] 4 Ω.

(7) The unit of electric power is:

[A] joule.
[B] volt.
[C] watt.
[D] ampere.

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

[A] 25 Ω.
[B] 50 Ω.
[C] 100 Ω.
[D] 0 Ω.

(9) 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] power.
[D] resistance.

(10) The current in a wire:

[A] depends only on the resistance of the wire.
[B] does not depend on resistance and potential difference.

C depends on both resistance and potential difference.

D depends only on the potential difference applied.

(11) The unit of resistivity is:

A ohm/m.

B ohm/m^2.

C ohm.

D ohm·m.

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

A The voltage across each resistor is the same.

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

C The current through each resistor is the same.

D The power dissipated by each resistor is the same.

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

A I^2Rt.

B IR^2t.

C IRt.

D I^2R/t.

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

A potential difference = current $\times$ resistance.

B current / potential difference = constant.

C potential difference / current = constant.

D current = resistance $\times$ potential difference.

(15) Complete the following statement: "The electromotive force is:

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

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

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

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

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

A The current through each resistor is the same.

B The power dissipated by each resistor is the same.

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

D The voltage across each resistor is the same.

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

A current.

B power.

C energy.

D time.

(18) 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 2 Ω.

D 3 Ω.

(19) 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 15 J.

B 60 J.

C 30 J.

D 120 J.

(20) 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 $D \cdot F$.

B $D^2 \cdot F$.

C D^2/F.

D $D \cdot F^2$.

(21) 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 400 C.

B 200 C.

C 600 C.

D 500 C.

(22) 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 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.

C all in parallel.

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

(23) The unit of current is:

A coulomb.

B volt.

C ampere.

D watt.

(24) 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 6.4×10^{18}.

C 36.

D 4.8×10^{15}.

(25) The resistivity of a wire depends on:

A material.

B area of cross-section.

C length.

D length, material and area of cross-section.

(26) 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 $\frac{R_Y}{R_X} = \frac{1}{1}$.

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

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

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

(27) When there is an electric current passing through a wire, the particles moving are:

A protons.

B atoms.

C electrons.

D ions.

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

A 100 V.

B 1 V.

C 4 V.

D 40 V.

(29) 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 $D \cdot P^2$.

B $D^2 \cdot P$.

C D^2/P.

D $D \cdot P$.

(30) Joule/coulomb is same as:

A ampere.

B ohm.

C watt.

D volt.

(31) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

A (a).

B (b).

C (c).

D (d).

(32) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

A 1 Ω.

B 0.8 Ω.

C 1.7 Ω.

D 0.4 Ω.

(33) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 4 at the end of the text.

A To the right.

B Upward.

C Downward.

D To the left.

(34) A battery is used to:

A safeguard against short-circuit.

B maintain a potential difference.

C measure electric current.

D measure electric potential.

(35) 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 $\frac{R_B}{R_A} = \frac{1}{1}$.

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

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

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

(36) A positive charge released from rest:

A moves towards the regions of equal potential.

B moves towards the regions of lower potential.

C moves towards the regions of higher potential.

D does not move.

(37) 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 6 Ω.

C 1 Ω.

D 3 Ω.

(38) 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 $R = \dfrac{L}{\rho A}$.

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

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

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

(39) All of the wires in Figure 5 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (a).

B (b).

C (d).

D (c).

(40) In Figure 6 at the end of the text,

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

B 3 Ω , 6 Ω and Ω are in parallel.

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

D 6 Ω, 3 Ω and 9 Ω are in series.

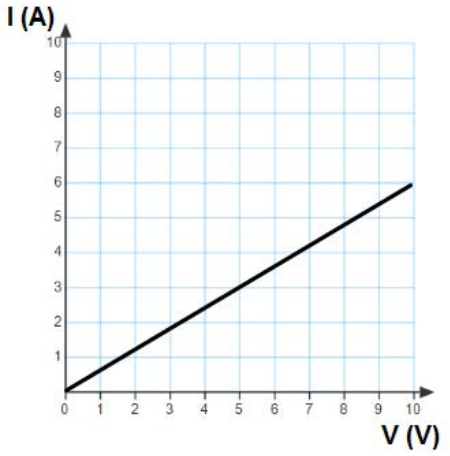


Figura 1

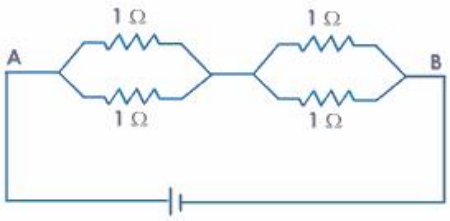


Figura 2

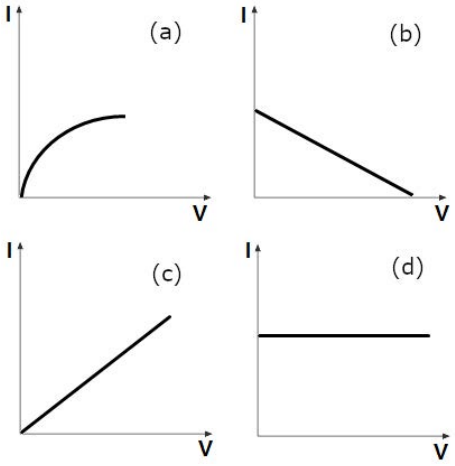


Figura 3

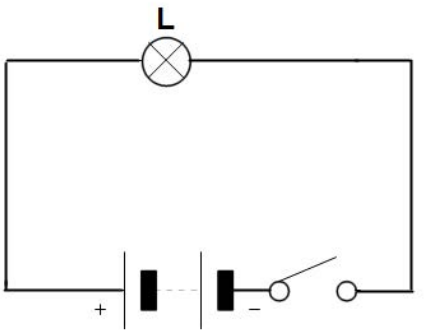


Figura 4

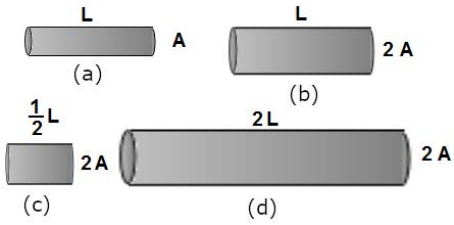


Figura 5

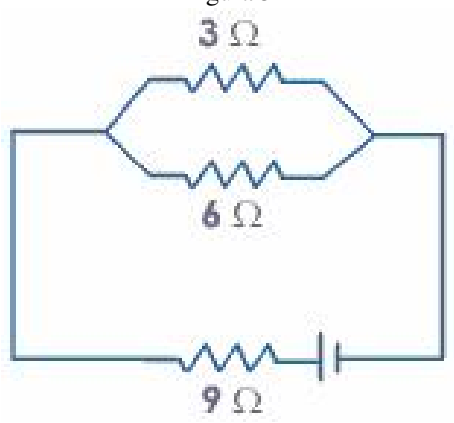


Figura 6

Buon compito ☺

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

Versione 3 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) 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] $D^2 \cdot P$.
- [B] $D \cdot P^2$.
- [C] D^2/P.
- [D] $D \cdot P$.

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

- [A] 4.8×10^{15}.
- [B] 36.
- [C] 2.2×10^{20}.
- [D] 6.4×10^{18}.

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

- [A] current.
- [B] time.
- [C] energy.
- [D] power.

(4) 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] Downward.
- [C] Upward.
- [D] To the left.

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

- [A] The current through each resistor is the same.
- [B] The power dissipated by each resistor is the same.
- [C] The voltage across each resistor is the same.
- [D] The total voltage across the resistors is the sum of the voltage across each resistor.

(6) 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] $D \cdot F$.
- [B] D^2/F.
- [C] $D^2 \cdot F$.
- [D] $D \cdot F^2$.

(7) 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] 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.
- [C] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.
- [D] all in parallel.

(8) The unit of current is:

- [A] volt.
- [B] watt.
- [C] ampere.
- [D] coulomb.

(9) 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] 6 Ω.
- [D] 3 Ω.

(10) Complete the following statement: "The electromotive force is:

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

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

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

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

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

A 100 Ω.

B 0 Ω.

C 50 Ω.

D 25 Ω.

(12) 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 3 Ω.

C 1 Ω.

D 2 Ω.

(13) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Resistance.

B Voltage.

C Power.

D Current.

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

A 50 Ω.

B 100 Ω.

C 25 Ω.

D 0 Ω.

(15) When there is an electric current passing through a wire, the particles moving are:

A electrons.

B protons.

C ions.

D atoms.

(16) A positive charge released from rest:

A does not move.

B moves towards the regions of equal potential.

C moves towards the regions of lower potential.

D moves towards the regions of higher potential.

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

A 100 V.

B 40 V.

C 4 V.

D 1 V.

(18) The unit of electric power is:

A watt.

B volt.

C joule.

D ampere.

(19) In Figure 2 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.

(20) 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 120 J.

B 60 J.

C 15 J.

D 30 J.

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

A 270 Ω.

B 810 Ω.

C 10 Ω.

D 30 Ω.

(22) All of the wires in Figure 3 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (d).

B (c).

C (b).

D (a).

(23) In Figure 4 at the end of the text, the resistance across AB is:

A 0.5 Ω.

B 2 Ω.

C 1 Ω.

D 4 Ω.

(24) 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 $\frac{R_Y}{R_X} = \frac{1}{1}$.

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

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

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

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

A 20 W.

B 10 W.

C 5 W.

D 15 W.

(26) 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 $\frac{R_B}{R_A} = \frac{1}{2}$.

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

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

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

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

A The power dissipated by each resistor is the same.

B The voltage across each resistor is the same.

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

D The current through each resistor is the same.

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

A 5 W.

B 0.2 W.

C 2 W.

D 0.5 W.

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

A IR^2t.

B I^2R/t.

C I^2Rt.

D IRt.

(30) Joule/coulomb is same as:

A ohm.

B ampere.

C volt.

D watt.

(31) 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 500 C.

B 200 C.

C 600 C.

D 400 C.

(32) The resistivity of a wire depends on:

A material.

B length.

C area of cross-section.

D length, material and area of cross-section.

(33) 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.

(34) 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 $R = \frac{L}{\rho A}$.

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

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

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

(35) The electric current as a function of voltage of a wire is presented by the graph in Figure 5. Compute the resistance of the wire.

A 0.8 Ω.

B 1.7 Ω.

C 0.4 Ω.

D 1 Ω.

(36) The current in a wire:

A depends only on the resistance of the wire.

B depends on both resistance and potential difference.

C does not depend on resistance and potential difference.

D depends only on the potential difference applied.

(37) Determine which of the graphs in Figure 6 at the end of the text represents Ohm's law for a solid conductor.

A (b).

B (d).

C (c).

D (a).

38 Determine which of the following statements does not represent Ohm's law.

A potential difference / current = constant.

B potential difference = current × resistance.

C current = resistance × potential difference.

D current / potential difference = constant.

39 A battery is used to:

A maintain a potential difference.

B measure electric potential.

C safeguard against short-circuit.

D measure electric current.

40 The unit of resistivity is:

A ohm·m.

B ohm/m^2.

C ohm.

D ohm/m.

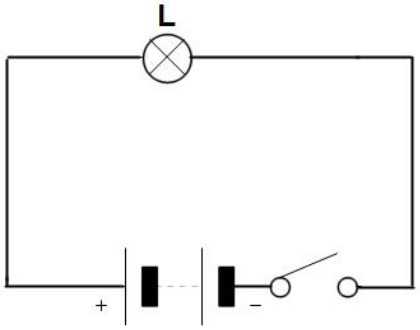


Figura 1

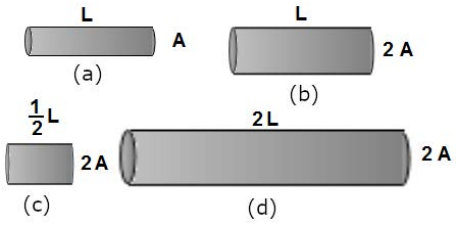


Figura 3

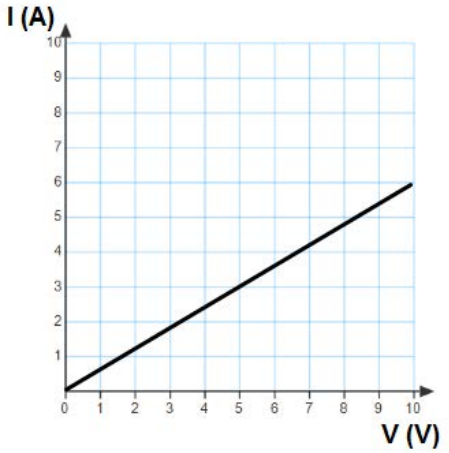


Figura 5

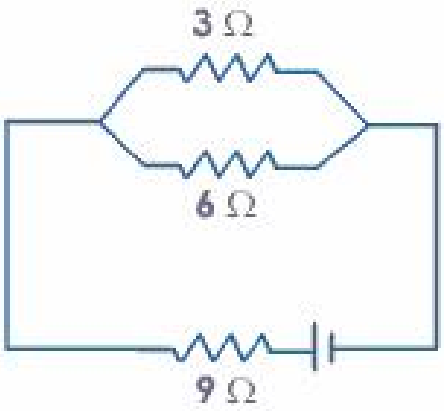


Figura 2

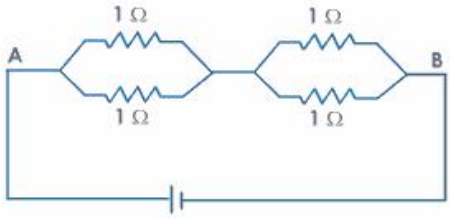


Figura 4

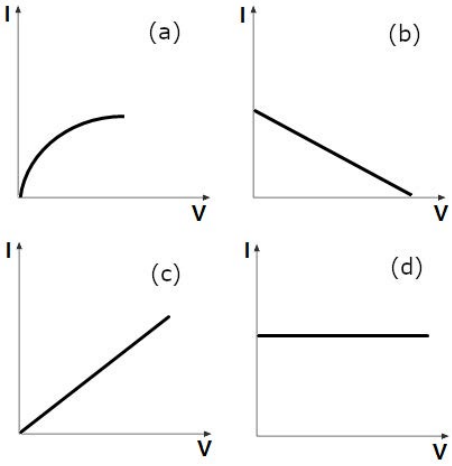


Figura 6

Buon compito ☺

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

Versione 4 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) 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 Upward.
B Downward.
C To the right.
D To the left.

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

A 100 V.
B 40 V.
C 1 V.
D 4 V.

(3) The unit of electric power is:

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

(4) 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 (d).
C (a).
D (b).

(5) 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 15 J.
C 60 J.
D 120 J.

(6) When there is an electric current passing through a wire, the particles moving are:

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

(7) 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 $\frac{R_B}{R_A} = \frac{1}{1}$.
B $\frac{R_B}{R_A} = \frac{1}{4}$.
C $\frac{R_B}{R_A} = \frac{1}{2}$.
D $\frac{R_B}{R_A} = \frac{2}{1}$.

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

A 30 Ω.
B 10 Ω.
C 270 Ω.
D 810 Ω.

(9) The unit of resistivity is:

A ohm.
B ohm/m.
C ohm/m^2.
D ohm·m.

(10) All of the wires in Figure 3 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 (c).

C (d).

D (a).

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

A The power dissipated by each resistor is the same.

B The voltage across each resistor is the same.

C The current through each resistor is the same.

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

(12) The unit of current is:

A volt.

B watt.

C ampere.

D coulomb.

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

A The voltage across each resistor is the same.

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

C The power dissipated by each resistor is the same.

D The current through each resistor is the same.

(14) 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 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

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

D all in parallel.

(15) Complete the following statement: "The electromotive force is:

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

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

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

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

(16) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 10 W.

B 20 W.

C 15 W.

D 5 W.

(17) 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 1 Ω.

B 6 Ω.

C 3 Ω.

D 2 Ω.

(18) Joule/coulomb is same as:

A ampere.

B volt.

C watt.

D ohm.

(19) 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.

(20) In Figure 5 at the end of the text, the resistance across *AB* is:

A 2 Ω.

B 0.5 Ω.

C 4 Ω.

D 1 Ω.

(21) In Figure 6 at the end of the text,

A 6 Ω, 3 Ω and 9 Ω are in series.

B 3 Ω , 6 Ω and Ω are in parallel.

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

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

(22) 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 200 C.

B 600 C.

C 500 C.

D 400 C.

(23) A battery is used to:

A maintain a potential difference.

B measure electric current.

C measure electric potential.

D safeguard against short-circuit.

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

A 36.

B 2.2×10^{20}.

C 4.8×10^{15}.

D 6.4×10^{18}.

(25) A positive charge released from rest:

A moves towards the regions of lower potential.

B does not move.

C moves towards the regions of higher potential.

D moves towards the regions of equal potential.

(26) 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 $R = \dfrac{A}{\rho L}$.

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

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

A current.

B energy.

C power.

D time.

(28) The resistivity of a wire depends on:

A area of cross-section.

B length, material and area of cross-section.

C material.

D length.

(29) 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 6 Ω.

D 3 Ω.

(30) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the resistance of the wire.

A 0.8 Ω.

B 1.7 Ω.

C 0.4 Ω.

D 1 Ω.

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

A 25 Ω.

B 0 Ω.

C 100 Ω.

D 50 Ω.

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

A 0 Ω.

B 25 Ω.

C 50 Ω.

D 100 Ω.

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

A 5 W.

B 0.5 W.

C 2 W.

D 0.2 W.

(34) 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 $D \cdot F$.

B $D \cdot F^2$.

C $D^2 \cdot F$.

D D^2/F.

(35) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A power.

B current.

C potential difference.

D resistance.

(36) 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^2/P.

B $D \cdot P^2$.

C $D \cdot P$.

D $D^2 \cdot P$.

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

A I^2R/t.

B IR^2t.

C I^2Rt.

D IRt.

(38) 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 $\frac{R_Y}{R_X} = \frac{1}{1}$.

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

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

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

(39) The current in a wire:

A depends on both resistance and potential difference.

B does not depend on resistance and potential difference.

C depends only on the potential difference applied.

D depends only on the resistance of the wire.

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

A current = resistance × potential difference.

B current / potential difference = constant.

C potential difference = current × resistance.

D potential difference / current = constant.

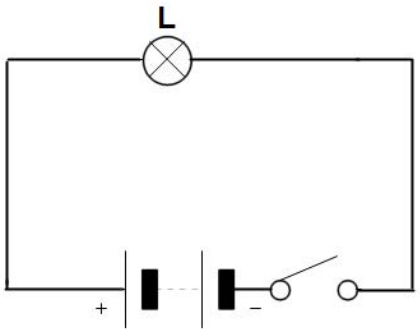


Figura 1

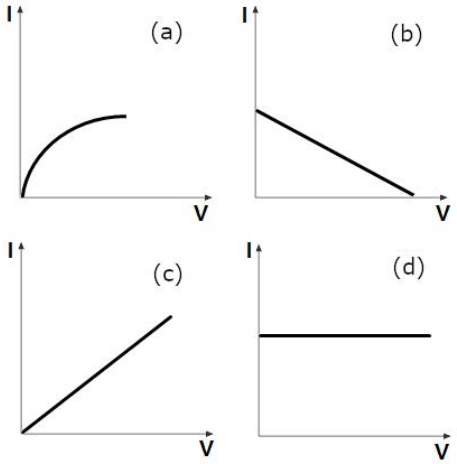


Figura 2

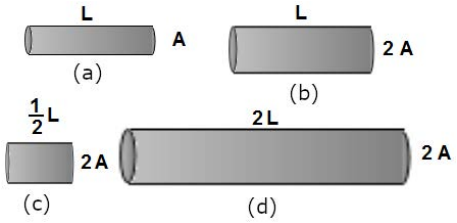


Figura 3

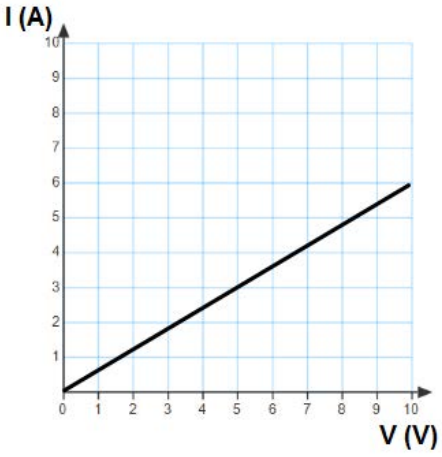


Figura 4

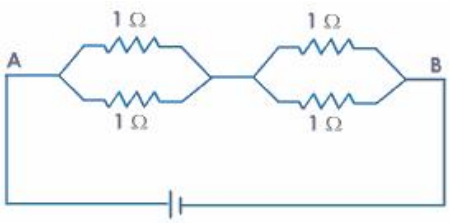


Figura 5

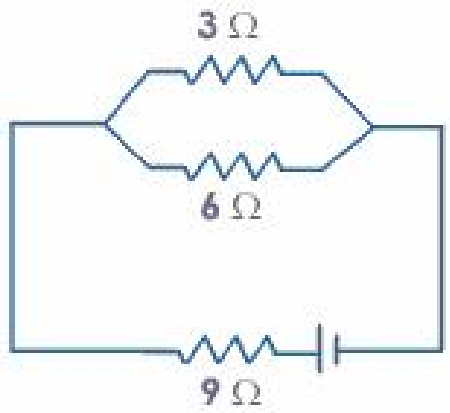


Figura 6

Buon compito ☺

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

Versione 5 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) Complete the following statement: "The electromotive force is:

- [A] the maximum electric potential energy stored within a battery".
- [B] the maximum potential difference between the terminals of a battery".
- [C] the force that accelerates electrons through a wire when a battery is connected to it".
- [D] the force that accelerates protons through a wire when a battery is connected to it".

(2) All of the wires in Figure 1 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

- [A] (c).
- [B] (b).
- [C] (d).
- [D] (a).

(3) When there is an electric current passing through a wire, the particles moving are:

- [A] protons.
- [B] atoms.
- [C] electrons.
- [D] ions.

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

- [A] 2 W.
- [B] 5 W.
- [C] 0.2 W.
- [D] 0.5 W.

(5) 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}.

(6) 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] $D \cdot F^2$.
- [C] $D \cdot F$.
- [D] D^2/F.

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

- [A] power.
- [B] current.
- [C] energy.
- [D] time.

(8) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

- [A] power.
- [B] potential difference.
- [C] current.
- [D] resistance.

(9) In Figure 2 at the end of the text, the resistance across AB is:

- [A] 2 Ω.
- [B] 1 Ω.
- [C] 0.5 Ω.
- [D] 4 Ω.

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

A 100 Ω.

B 0 Ω.

C 50 Ω.

D 25 Ω.

(11) Joule/coulomb is same as:

A watt.

B ampere.

C volt.

D ohm.

(12) In Figure 3 at the end of the text,

A 6 Ω, 3 Ω and 9 Ω are in series.

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

C 3 Ω , 6 Ω and Ω are in parallel.

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

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

A 3 Ω.

B 1 Ω.

C 6 Ω.

D 2 Ω.

(14) The unit of current is:

A ampere.

B volt.

C coulomb.

D watt.

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

A 100 V.

B 40 V.

C 4 V.

D 1 V.

(16) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the resistance of the wire.

A 1 Ω.

B 0.8 Ω.

C 1.7 Ω.

D 0.4 Ω.

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

A The current through each resistor is the same.

B The power dissipated by each resistor is the same.

C The voltage across each resistor is the same.

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

(18) Determine which of the graphs in Figure 5 at the end of the text represents Ohm's law for a solid conductor.

A (a).

B (c).

C (d).

D (b).

(19) 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 $D^2 \cdot P$.

B $D \cdot P^2$.

C $D \cdot P$.

D D^2/P.

(20) A positive charge released from rest:

A moves towards the regions of equal potential.

B moves towards the regions of higher potential.

C does not move.

D moves towards the regions of lower potential.

(21) 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.

(22) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 5 W.

B 20 W.

C 15 W.

D 10 W.

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

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

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

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

(24) 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 parallel.

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

C all in series.

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

(25) 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 1 Ω.

B 3 Ω.

C 6 Ω.

D 2 Ω.

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

A current / potential difference = constant.

B potential difference / current = constant.

C current = resistance × potential difference.

D potential difference = current × resistance.

(27) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 6 at the end of the text.

A Downward.

B To the left.

C To the right.

D Upward.

(28) The current in a wire:

A does not depend on resistance and potential difference.

B depends on both resistance and potential difference.

C depends only on the potential difference applied.

D depends only on the resistance of the wire.

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

A The voltage across each resistor is the same.

B The power dissipated by each resistor is the same.

C The current through each resistor is the same.

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

(30) The resistivity of a wire depends on:

A material.

B length.

C length, material and area of cross-section.

D area of cross-section.

(31) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Power.

B Voltage.

C Current.

D Resistance.

(32) The unit of electric power is:

A watt.

B joule.

C ampere.

D volt.

(33) 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 500 C.

C 400 C.

D 200 C.

(34) 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 15 J.

B 30 J.

C 60 J.

D 120 J.

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

A 30 Ω.

B 270 Ω.

C 10 Ω.

D 810 Ω.

(36) The unit of resistivity is:

A ohm/m.

B ohm·m.

C ohm.

D ohm/m^2.

(37) 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 $R = \dfrac{A}{\rho L}$.

(38) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

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

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

A IR^2t.

B I^2Rt.

C I^2R/t.

D IRt.

40 A battery is used to:

A measure electric potential.

B safeguard against short-circuit.

C maintain a potential difference.

D measure electric current.

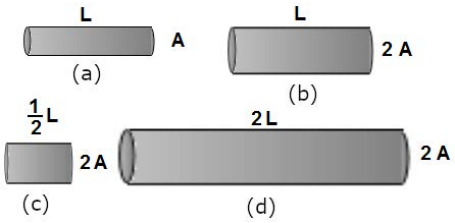


Figura 1

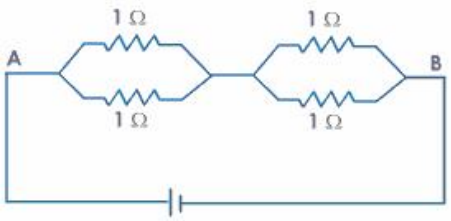
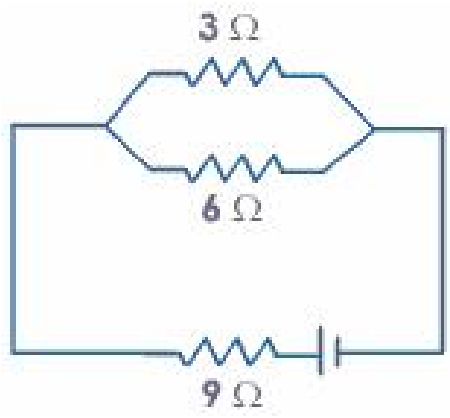


Figura 2



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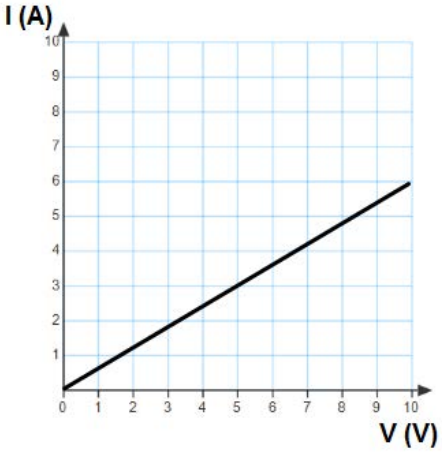
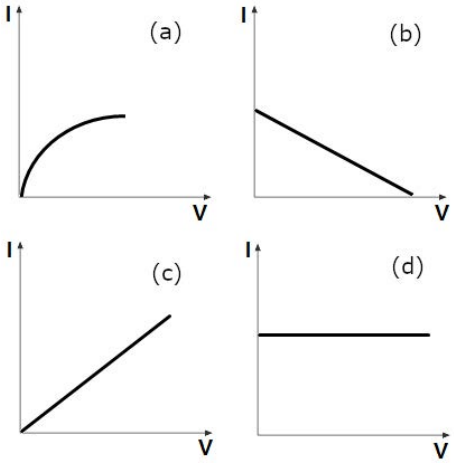


Figura 4



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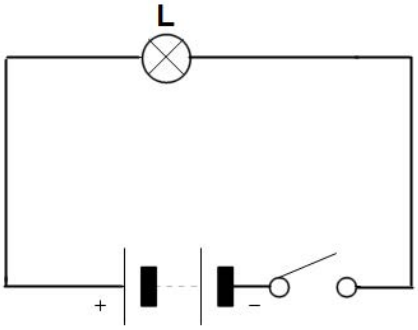


Figura 6

Buon compito ☺

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

Versione 6 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) The current in a wire:

- [A] depends on both resistance and potential difference.
- [B] does not depend on resistance and potential difference.
- [C] depends only on the potential difference applied.
- [D] depends only on the resistance of the wire.

(2) 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] $R = \dfrac{A}{\rho L}$.
- [B] $R = \dfrac{\rho L}{A}$.
- [C] $R = \dfrac{L}{\rho A}$.
- [D] $R = \dfrac{\rho A}{L}$.

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

- [A] 100 Ω.
- [B] 0 Ω.
- [C] 50 Ω.
- [D] 25 Ω.

(4) 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] 200 C.
- [B] 400 C.
- [C] 600 C.
- [D] 500 C.

(5) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

- [A] power.
- [B] potential difference.
- [C] resistance.
- [D] current.

(6) 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] 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.
- [C] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.
- [D] all in parallel.

(7) 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/F.
- [B] $D \cdot F^2$.
- [C] $D^2 \cdot F$.
- [D] $D \cdot F$.

(8) 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] $D^2 \cdot P$.
- [B] D^2/P.
- [C] $D \cdot P$.
- [D] $D \cdot P^2$.

(9) Two resistors $R_1 = 6$ Ω and $R_2 = 12$ Ω are connected in parallel to each other and in series to $R_2 = 2$ Ω. Compute the net resistance in the circuit.

- [A] 1 Ω.
- [B] 2 Ω.
- [C] 6 Ω.

D 3 Ω.

(10) 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.

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

A 0.2 W.

B 5 W.

C 0.5 W.

D 2 W.

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

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

B The voltage across each resistor is the same.

C The power dissipated by each resistor is the same.

D The current through each resistor is the same.

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

A current = resistance × potential difference.

B potential difference / current = constant.

C current / potential difference = constant.

D potential difference = current × resistance.

(14) Joule/coulomb is same as:

A watt.

B ampere.

C volt.

D ohm.

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

A 100 V.

B 40 V.

C 4 V.

D 1 V.

(16) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

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

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

(17) The resistivity of a wire depends on:

A length, material and area of cross-section.

B length.

C area of cross-section.

D material.

(18) When there is an electric current passing through a wire, the particles moving are:

A ions.

B protons.

C atoms.

D electrons.

(19) In Figure 1 at the end of the text,

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

B 3 Ω , 6 Ω and Ω are in parallel.

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

D 6 Ω, 3 Ω and 9 Ω are in series.

(20) 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 $\frac{R_Y}{R_X} = \frac{1}{2}$.

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

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

(21) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 20 W.

B 5 W.

C 10 W.

D 15 W.

(22) Complete the following statement: "The electromotive force is:

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

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

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

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

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

[A] The voltage across each resistor is the same.

[B] The power dissipated by each resistor is the same.

[C] The current through each resistor is the same.

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

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

[A] 50 Ω.

[B] 100 Ω.

[C] 0 Ω.

[D] 25 Ω.

(25) The unit of resistivity is:

[A] ohm/m^2.

[B] ohm/m.

[C] ohm.

[D] ohm·m.

(26) 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] 120 J.

[B] 30 J.

[C] 60 J.

[D] 15 J.

(27) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

[A] (c).

[B] (d).

[C] (b).

[D] (a).

(28) The unit of current is:

[A] ampere.

[B] coulomb.

[C] volt.

[D] watt.

(29) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 4 at the end of the text.

[A] Upward.

[B] To the right.

[C] Downward.

[D] To the left.

(30) 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.

(31) A battery is used to:

[A] maintain a potential difference.

[B] measure electric current.

[C] safeguard against short-circuit.

[D] measure electric potential.

(32) In Figure 5 at the end of the text, the resistance across AB is:

[A] 1 Ω.

[B] 4 Ω.

[C] 2 Ω.

[D] 0.5 Ω.

(33) All of the wires in Figure 6 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] (c).

[C] (d).

[D] (a).

(34) A positive charge released from rest:

[A] moves towards the regions of lower potential.

[B] moves towards the regions of higher potential.

[C] does not move.

[D] moves towards the regions of equal potential.

(35) The unit of electric power is:

[A] watt.

[B] joule.

[C] volt.

[D] ampere.

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

[A] 36.

[B] 2.2×10^{20}.

[C] 6.4×10^{18}.

[D] 4.8×10^{15}.

(37) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

[A] Current.

[B] Power.

[C] Resistance.

[D] Voltage.

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

A current.

B power.

C energy.

D time.

(39) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the resistance of the wire.

A 0.8 Ω.

B 0.4 Ω.

C 1.7 Ω.

D 1 Ω.

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

A 270 Ω.

B 30 Ω.

C 810 Ω.

D 10 Ω.

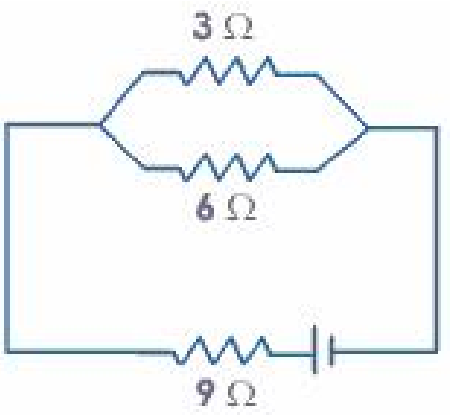


Figura 1

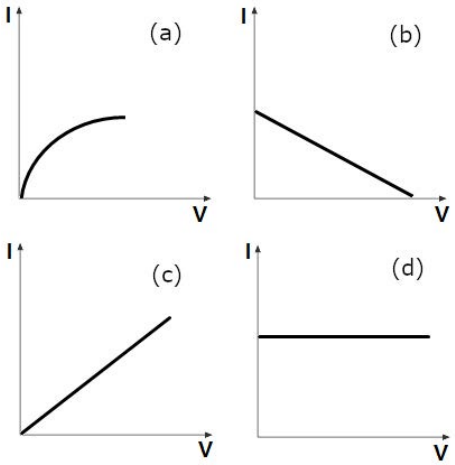
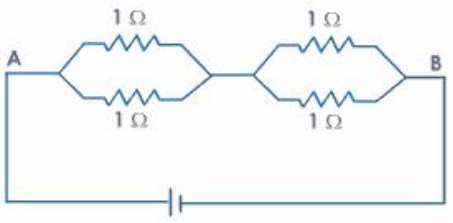


Figura 3



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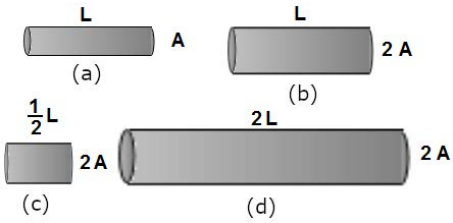


Figura 6

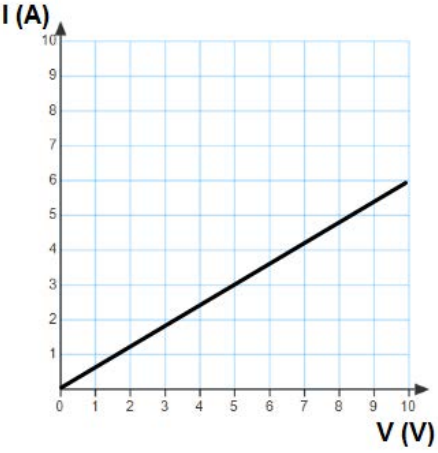


Figura 2

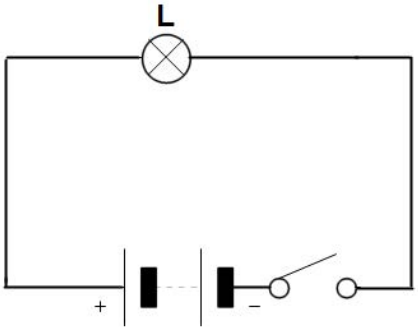


Figura 4

Buon compito ☺

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

Versione 7 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) 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^2/P.
- [B] $D \cdot P$.
- [C] $D \cdot P^2$.
- [D] $D^2 \cdot P$.

(2) 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] 200 C.
- [B] 500 C.
- [C] 400 C.
- [D] 600 C.

(3) 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 left.
- [B] Downward.
- [C] To the right.
- [D] Upward.

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

- [A] 5 W.
- [B] 0.2 W.
- [C] 0.5 W.
- [D] 2 W.

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

- [A] 50 Ω.
- [B] 25 Ω.
- [C] 100 Ω.
- [D] 0 Ω.

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

- [A] (b).
- [B] (c).
- [C] (d).
- [D] (a).

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

- [A] 36.
- [B] 6.4×10^{18}.
- [C] 4.8×10^{15}.
- [D] 2.2×10^{20}.

(8) The unit of electric power is:

- [A] ampere.
- [B] volt.
- [C] watt.
- [D] joule.

(9) The unit of resistivity is:

- [A] ohm/m^2.
- [B] ohm·m.
- [C] ohm/m.
- [D] ohm.

(10) Joule/coulomb is same as:

- [A] ohm.
- [B] watt.

C ampere.

D volt.

(11) 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 40 V.

D 1 V.

(12) All of the wires in Figure 3 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (c).

B (b).

C (a).

D (d).

(13) 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 $R = \frac{\rho L}{A}$.

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

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

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

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

A current = resistance × potential difference.

B potential difference / current = constant.

C current / potential difference = constant.

D potential difference = current × resistance.

(15) 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 15 J.

B 30 J.

C 60 J.

D 120 J.

(16) In Figure 4 at the end of the text, the resistance across AB is:

A 0.5 Ω.

B 4 Ω.

C 2 Ω.

D 1 Ω.

(17) 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 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

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

D all in parallel.

(18) The current in a wire:

A does not depend on resistance and potential difference.

B depends only on the potential difference applied.

C depends only on the resistance of the wire.

D depends on both resistance and potential difference.

(19) A battery is used to:

A measure electric current.

B measure electric potential.

C safeguard against short-circuit.

D maintain a potential difference.

(20) 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 $\frac{R_Y}{R_X} = \frac{1}{1}$.

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

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

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

(21) 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 $\frac{R_B}{R_A} = \frac{1}{2}$.

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

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

(22) Complete the following statement: "The electromotive force is:

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

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

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

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

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

A The power dissipated by each resistor is the same.

B The voltage across each resistor is the same.

C The current through each resistor is the same.

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

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

A 20 W.

B 10 W.

C 15 W.

D 5 W.

(25) 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 $D \cdot F$.

B $D \cdot F^2$.

C D^2/F.

D $D^2 \cdot F$.

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

A 810 Ω.

B 270 Ω.

C 30 Ω.

D 10 Ω.

(27) Two resistors $R_1 = 6$ Ω and $R_2 = 12$ Ω are connected in parallel to each other and in series to $R_2 = 2$ Ω. Compute the net resistance in the circuit.

A 2 Ω.

B 6 Ω.

C 3 Ω.

D 1 Ω.

(28) When there is an electric current passing through a wire, the particles moving are:

A protons.

B electrons.

C atoms.

D ions.

(29) A positive charge released from rest:

A moves towards the regions of equal potential.

B moves towards the regions of lower potential.

C does not move.

D moves towards the regions of higher potential.

(30) The resistivity of a wire depends on:

A material.

B length, material and area of cross-section.

C length.

D area of cross-section.

(31) In Figure 6 at the end of the text,

A 3 Ω , 6 Ω and Ω are in parallel.

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

C 6 Ω, 3 Ω and 9 Ω are in series.

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

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

A power.

B current.

C time.

D energy.

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

A 0 Ω.

B 25 Ω.

C 50 Ω.

D 100 Ω.

(34) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Power.

B Voltage.

C Current.

D Resistance.

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

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

B The voltage across each resistor is the same.

C The current through each resistor is the same.

D The power dissipated by each resistor is the same.

(36) The electric current as a function of voltage of a wire is presented by the graph in Figure 5. Compute the resistance of the wire.

A 0.8 Ω.

B 1 Ω.

C 0.4 Ω.

D 1.7 Ω.

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

A IRt.

B I^2R/t.

C I^2Rt.

D IR^2t.

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

A power.

B current.

C resistance.

D potential difference.

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

A 6 Ω.

B 1 Ω.

C 2 Ω.

D 3 Ω.

40 The unit of current is:

A watt.

B volt.

C coulomb.

D ampere.

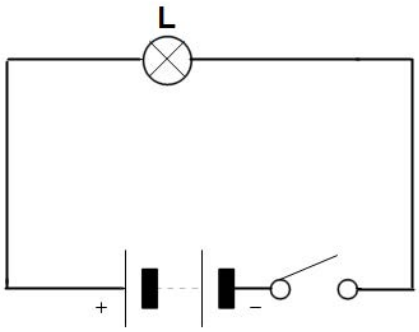


Figura 1

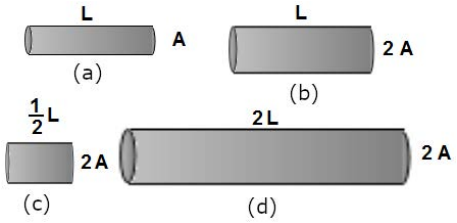


Figura 3

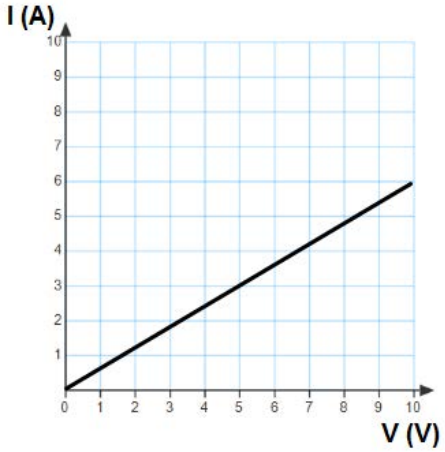


Figura 5

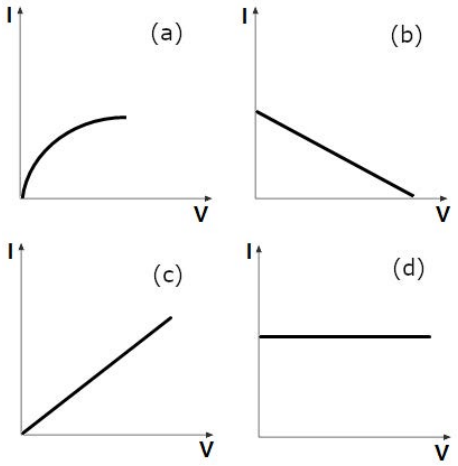


Figura 2

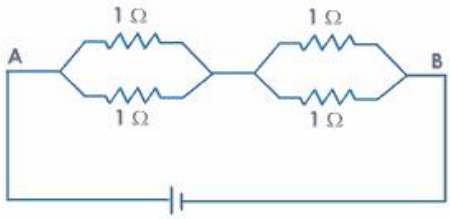


Figura 4

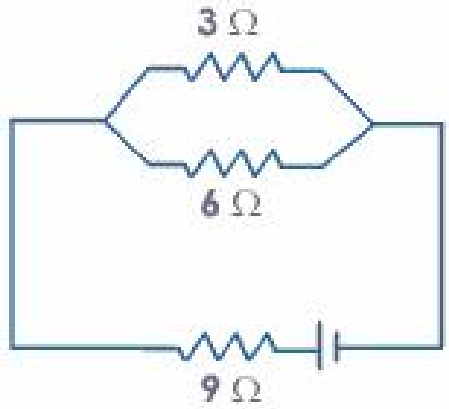


Figura 6

Buon compito ☺

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

Versione 8 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) The unit of electric power is:

- [A] watt.
- [B] ampere.
- [C] volt.
- [D] joule.

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

- [A] The current through each resistor is the same.
- [B] The power dissipated by each resistor is the same.
- [C] The total current through the resistors is the sum of the current through each resistor.
- [D] The voltage across each resistor is the same.

(3) 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] $\frac{R_Y}{R_X} = \frac{1}{4}$.
- [B] $\frac{R_Y}{R_X} = \frac{1}{2}$.
- [C] $\frac{R_Y}{R_X} = \frac{2}{1}$.
- [D] $\frac{R_Y}{R_X} = \frac{1}{1}$.

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

- [A] current / potential difference = constant.
- [B] potential difference = current $\times$ resistance.
- [C] potential difference / current = constant.
- [D] current = resistance $\times$ potential difference.

(5) 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] 4.8×10^{15}.
- [C] 6.4×10^{18}.
- [D] 36.

(6) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. 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.

(7) A positive charge released from rest:

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

(8) Complete the following statement: "The electromotive force is:

- [A] the maximum electric potential energy stored within a battery".
- [B] the maximum potential difference between the terminals of a battery".
- [C] the force that accelerates electrons through a wire when a battery is connected to it".
- [D] the force that accelerates protons through a wire when a battery is connected to it".

(9) In Figure 2 at the end of the text, the resistance across AB is:

- [A] 1 Ω.
- [B] 2 Ω.
- [C] 4 Ω.

D 0.5 Ω.

(10) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A power.

B resistance.

C potential difference.

D current.

(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 500 C.

B 400 C.

C 600 C.

D 200 C.

(12) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 3 at the end of the text.

A Downward.

B To the right.

C Upward.

D To the left.

(13) Determine which of the graphs in Figure 4 at the end of the text represents Ohm's law for a solid conductor.

A (c).

B (b).

C (a).

D (d).

(14) 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^2/P.

B $D \cdot P$.

C $D^2 \cdot P$.

D $D \cdot P^2$.

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

A The power dissipated by each resistor is the same.

B The current through each resistor is the same.

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

D The voltage across each resistor is the same.

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

A I^2R/t.

B IRt.

C IR^2t.

D I^2Rt.

(17) 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.

(18) 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/F.

B $D \cdot F^2$.

C $D \cdot F$.

D $D^2 \cdot F$.

(19) Two resistors $R_1 = 3$ Ω and $R_2 = 6$ Ω are connected in parallel. Compute the net resistance in the circuit.

A 3 Ω.

B 1 Ω.

C 6 Ω.

D 2 Ω.

(20) 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 $\frac{R_B}{R_A} = \frac{1}{2}$.

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

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

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

(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 $R = \frac{\rho L}{A}$.

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

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

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

(22) Two resistors $R_1 = 6$ Ω and $R_2 = 12$ Ω are connected in parallel to each other and in series to $R_2 = 2$ Ω. Compute the net resistance in the circuit.

A 6 Ω.

B 1 Ω.

C 2 Ω.

D 3 Ω.

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

[A] 25 Ω.

[B] 0 Ω.

[C] 50 Ω.

[D] 100 Ω.

(24) A battery is used to:

[A] measure electric potential.

[B] measure electric current.

[C] safeguard against short-circuit.

[D] maintain a potential difference.

(25) The resistivity of a wire depends on:

[A] area of cross-section.

[B] length.

[C] length, material and area of cross-section.

[D] material.

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

[A] time.

[B] energy.

[C] current.

[D] power.

(27) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

[A] Current.

[B] Resistance.

[C] Power.

[D] Voltage.

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

[A] 4 V.

[B] 40 V.

[C] 100 V.

[D] 1 V.

(29) 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] 3 Ω , 6 Ω and Ω are in parallel.

[D] 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω.

(30) All of the wires in Figure 6 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

[A] (c).

[B] (a).

[C] (b).

[D] (d).

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

[A] 50 Ω.

[B] 0 Ω.

[C] 100 Ω.

[D] 25 Ω.

(32) The current in a wire:

[A] does not depend on resistance and potential difference.

[B] depends on both resistance and potential difference.

[C] depends only on the resistance of the wire.

[D] depends only on the potential difference applied.

(33) The unit of resistivity is:

[A] ohm·m.

[B] ohm/m^2.

[C] ohm/m.

[D] ohm.

(34) Joule/coulomb is same as:

[A] ohm.

[B] watt.

[C] volt.

[D] ampere.

(35) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

[A] 1 Ω.

[B] 0.8 Ω.

[C] 1.7 Ω.

[D] 0.4 Ω.

(36) When there is an electric current passing through a wire, the particles moving are:

[A] protons.

[B] atoms.

[C] ions.

[D] electrons.

(37) The unit of current is:

[A] volt.

[B] watt.

[C] coulomb.

[D] ampere.

(38) 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 120 J.

C 15 J.

D 60 J.

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

A 30 Ω.

B 270 Ω.

C 810 Ω.

D 10 Ω.

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

A 5 W.

B 2 W.

C 0.5 W.

D 0.2 W.

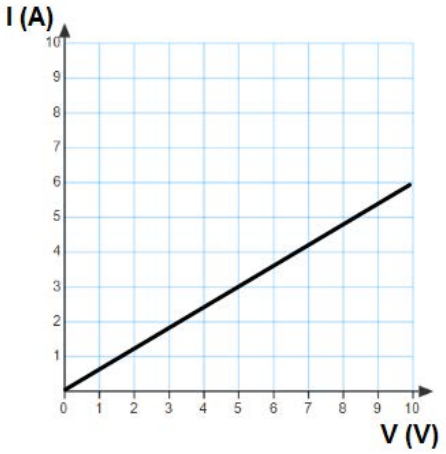


Figura 1

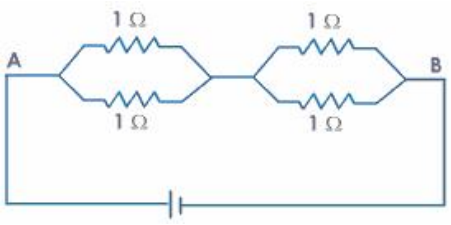


Figura 2

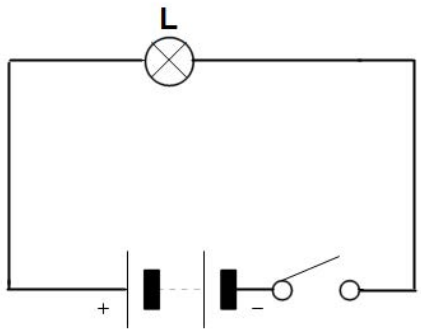


Figura 3

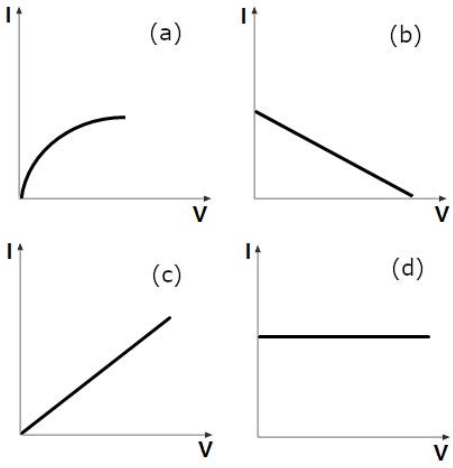


Figura 4

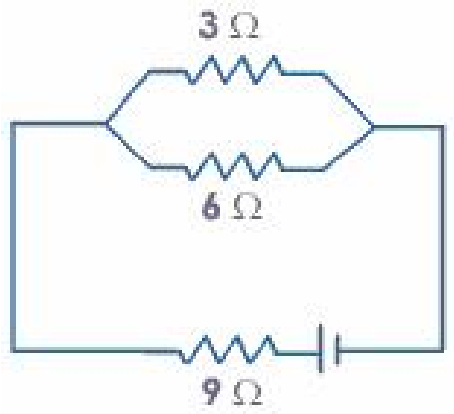


Figura 5

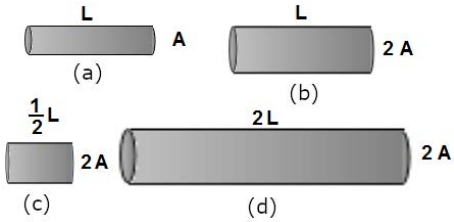


Figura 6

Buon compito ☺

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

Versione 9 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) 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 $3\ \Omega$.
B $6\ \Omega$.
C $2\ \Omega$.
D $1\ \Omega$.

(2) In Figure 1 at the end of the text,

A 3 Ω , 6 Ω are in parallel and 9 Ω is in series.
B 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω.
C 3 Ω , 6 Ω and Ω are in parallel.
D 6 Ω, 3 Ω and 9 Ω are in series.

(3) Determine which one of the following statements concerning resistors in parallel 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 voltage across the resistors is the sum of the voltage across each resistor.

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

A 100 Ω.
B 0 Ω.
C 50 Ω.
D 25 Ω.

(5) When there is an electric current passing through a wire, the particles moving are:

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

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

A 4.8×10^{15}.
B 2.2×10^{20}.
C 36.
D 6.4×10^{18}.

(7) The unit of resistivity is:

A ohm.
B ohm/m.
C ohm/m^2.
D ohm·m.

(8) 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 810 Ω.
C 270 Ω.
D 30 Ω.

(9) 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^2/F.
C $D \cdot F^2$.
D $D \cdot F$.

(10) 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.

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

A I^2R/t.

B I^2Rt.

C IR^2t.

D IRt.

(12) 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 $R = \dfrac{L}{\rho A}$.

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

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

(13) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A resistance.

B power.

C current.

D potential difference.

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

A time.

B current.

C energy.

D power.

(15) 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 $\dfrac{R_B}{R_A} = \dfrac{1}{1}$.

B $\dfrac{R_B}{R_A} = \dfrac{2}{1}$.

C $\dfrac{R_B}{R_A} = \dfrac{1}{4}$.

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

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

A The power dissipated by each resistor is the same.

B The voltage across each resistor is the same.

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

D The current through each resistor is the same.

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

A 5 W.

B 0.2 W.

C 2 W.

D 0.5 W.

(18) 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 200 C.

B 400 C.

C 600 C.

D 500 C.

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

A 50 Ω.

B 0 Ω.

C 100 Ω.

D 25 Ω.

(20) The current in a wire:

A depends only on the resistance of the wire.

B depends only on the potential difference applied.

C does not depend on resistance and potential difference.

D depends on both resistance and potential difference.

(21) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the resistance of the wire.

A 1.7 Ω.

B 0.8 Ω.

C 0.4 Ω.

D 1 Ω.

(22) 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 $D^2 \cdot P$.

B D^2/P.

C $D \cdot P^2$.

D $D \cdot P$.

(23) The unit of electric power is:

A ampere.

B joule.

C volt.

D watt.

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

[A] 4 V.

[B] 1 V.

[C] 100 V.

[D] 40 V.

(25) A positive charge released from rest:

[A] does not move.

[B] moves towards the regions of equal potential.

[C] moves towards the regions of lower potential.

[D] moves towards the regions of higher potential.

(26) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

[A] (b).

[B] (c).

[C] (a).

[D] (d).

(27) 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] (c).

[B] (d).

[C] (b).

[D] (a).

(28) The unit of current is:

[A] ampere.

[B] watt.

[C] coulomb.

[D] volt.

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

[A] potential difference = current × resistance.

[B] potential difference / current = constant.

[C] current = resistance × potential difference.

[D] current / potential difference = constant.

(30) The resistivity of a wire depends on:

[A] area of cross-section.

[B] length.

[C] length, material and area of cross-section.

[D] material.

(31) 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] 120 J.

[B] 30 J.

[C] 60 J.

[D] 15 J.

(32) Complete the following statement: "The electromotive force is:

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

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

[C] the maximum electric potential energy stored within a battery".

[D] the maximum potential difference between the terminals of a battery".

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

[A] Downward.

[B] To the left.

[C] To the right.

[D] Upward.

(34) A battery is used to:

[A] measure electric potential.

[B] maintain a potential difference.

[C] measure electric current.

[D] safeguard against short-circuit.

(35) Joule/coulomb is same as:

[A] volt.

[B] ampere.

[C] watt.

[D] ohm.

(36) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the power dissipated in the resistor when the applied voltage is 5 V.

[A] 20 W.

[B] 10 W.

[C] 15 W.

[D] 5 W.

(37) 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] 6 Ω.

[C] 1 Ω.

[D] 3 Ω.

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

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

B all in series.

C all in parallel.

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

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

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

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

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

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

A 2 Ω.

B 4 Ω.

C 1 Ω.

D 0.5 Ω.

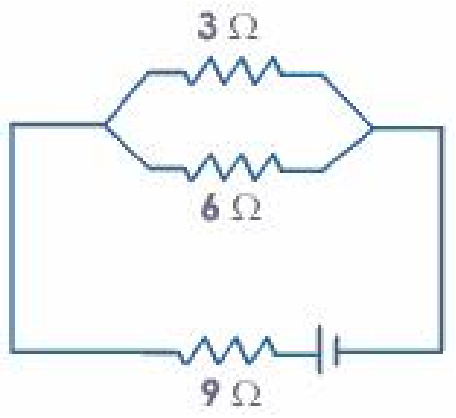


Figura 1

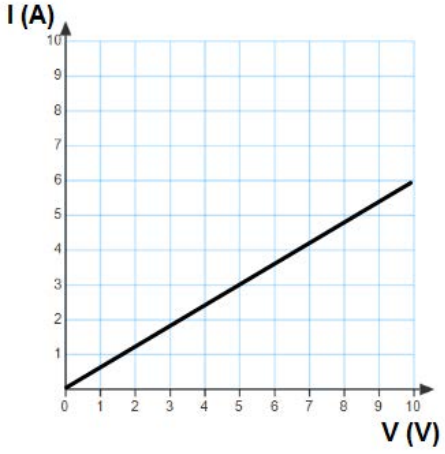
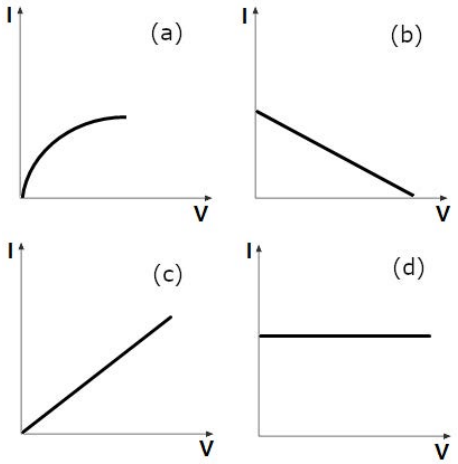


Figura 2



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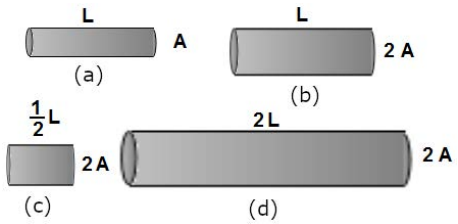


Figura 4

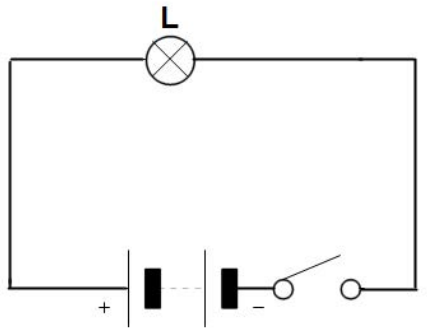


Figura 5

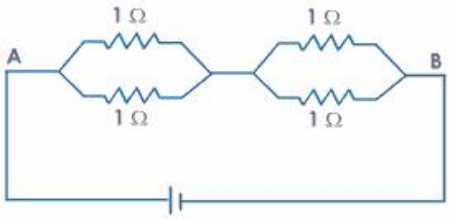


Figura 6

Buon compito ☺

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

Versione 10 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) In Figure 1 at the end of the text, the resistance across *AB* is:

- [A] 1 Ω.
- [B] 4 Ω.
- [C] 2 Ω.
- [D] 0.5 Ω.

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

- [A] energy.
- [B] power.
- [C] time.
- [D] current.

(3) When there is an electric current passing through a wire, the particles moving are:

- [A] protons.
- [B] atoms.
- [C] ions.
- [D] electrons.

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

- [A] IRt.
- [B] I^2R/t.
- [C] IR^2t.
- [D] I^2Rt.

(5) 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] 400 C.
- [B] 500 C.
- [C] 600 C.
- [D] 200 C.

(6) The unit of resistivity is:

- [A] ohm/m.
- [B] ohm.
- [C] ohm/m^2.
- [D] ohm·m.

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

- [A] 4.8×10^{15}.
- [B] 36.
- [C] 2.2×10^{20}.
- [D] 6.4×10^{18}.

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

- [A] The current through each resistor is the same.
- [B] The total current through the resistors is the sum of the current through each resistor.
- [C] The voltage across each resistor is the same.
- [D] The power dissipated by each resistor is the same.

(9) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the resistance of the wire.

- [A] 0.4 Ω.
- [B] 1 Ω.
- [C] 0.8 Ω.
- [D] 1.7 Ω.

(10) The unit of electric power is:

- [A] joule.
- [B] volt.
- [C] ampere.

D watt.

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

A 50 Ω.

B 0 Ω.

C 100 Ω.

D 25 Ω.

(12) 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 2 Ω.

B 6 Ω.

C 3 Ω.

D 1 Ω.

(13) 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 $R = \dfrac{L}{\rho A}$.

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

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

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

(14) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 3 at the end of the text.

A Downward.

B Upward.

C To the left.

D To the right.

(15) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 15 W.

B 10 W.

C 20 W.

D 5 W.

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

A current / potential difference = constant.

B current = resistance × potential difference.

C potential difference / current = constant.

D potential difference = current × resistance.

(17) A battery is used to:

A measure electric potential.

B measure electric current.

C safeguard against short-circuit.

D maintain a potential difference.

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

A 0 Ω.

B 50 Ω.

C 25 Ω.

D 100 Ω.

(19) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A current.

B power.

C resistance.

D potential difference.

(20) 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 $D \cdot P^2$.

B D^2/P.

C $D \cdot P$.

D $D^2 \cdot P$.

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

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

B all in parallel.

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

D all in series.

(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 (a).

B (d).

C (b).

D (c).

(23) In Figure 5 at the end of the text,

A 6 Ω, 3 Ω and 9 Ω are in series.

B 3 Ω , 6 Ω and Ω are in parallel.

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

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

(24) A positive charge released from rest:

A does not move.

B moves towards the regions of equal potential.

C moves towards the regions of higher potential.

D moves towards the regions of lower potential.

(25) 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 $\frac{R_Y}{R_X} = \frac{1}{2}$.

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

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

(26) The current in a wire:

A depends only on the potential difference applied.

B depends only on the resistance of the wire.

C depends on both resistance and potential difference.

D does not depend on resistance and potential difference.

(27) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Power.

B Voltage.

C Resistance.

D Current.

(28) Determine which of the graphs in Figure 6 at the end of the text represents Ohm's law for a solid conductor.

A (d).

B (b).

C (c).

D (a).

(29) Complete the following statement: "The electromotive force is:

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

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

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

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

(30) Determine which one of the following statements concerning resistors in parallel 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 voltage across the resistors is the sum of the voltage across each resistor.

(31) The unit of current is:

A watt.

B volt.

C coulomb.

D ampere.

(32) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

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

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

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

A 810 Ω.

B 30 Ω.

C 10 Ω.

D 270 Ω.

(34) 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^2/F.

C $D \cdot F^2$.

D $D \cdot F$.

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

A 1 Ω.

B 6 Ω.

C 3 Ω.

D 2 Ω.

(36) The resistivity of a wire depends on:

A material.

B area of cross-section.

C length, material and area of cross-section.

D length.

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

A 2 W.

B 5 W.

C 0.5 W.

D 0.2 W.

(38) Joule/coulomb is same as:

[A] watt.

[B] volt.

[C] ampere.

[D] ohm.

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

[A] 40 V.

[B] 1 V.

[C] 4 V.

[D] 100 V.

(40) 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] 60 J.

[B] 15 J.

[C] 120 J.

[D] 30 J.

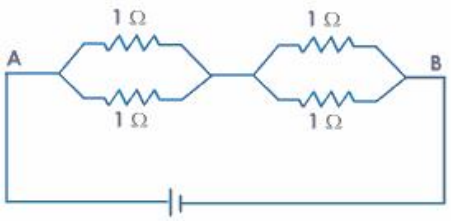


Figura 1

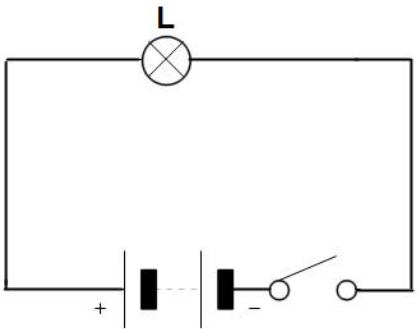
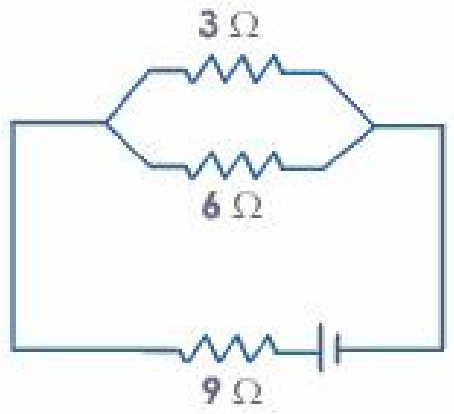


Figura 3



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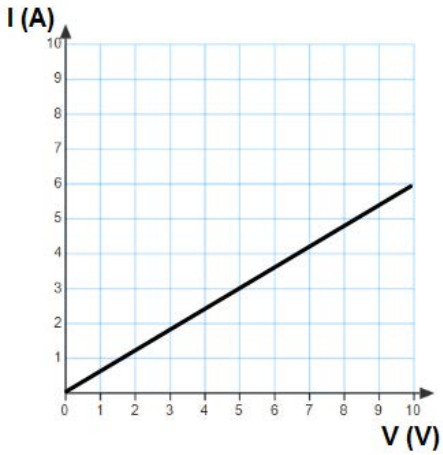


Figura 2

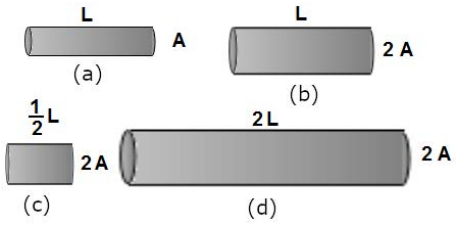


Figura 4

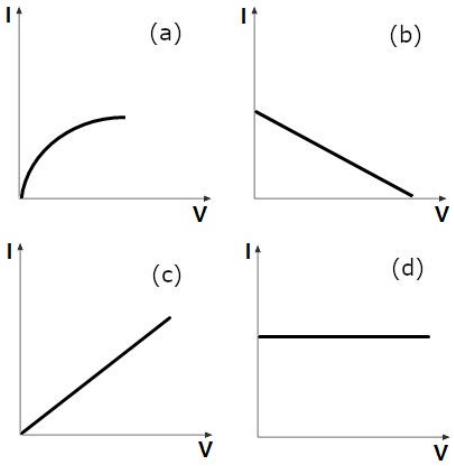


Figura 6

Buon compito ☺

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

Versione 11 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) The unit of electric power is:

- [A] watt.
- [B] volt.
- [C] joule.
- [D] ampere.

(2) 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 parallel.
- [B] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.
- [C] 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.
- [D] all in series.

(3) A battery is used to:

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

(4) 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] 200 C.
- [B] 600 C.
- [C] 400 C.
- [D] 500 C.

(5) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

- [A] resistance.
- [B] current.
- [C] power.
- [D] potential difference.

(6) 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] $\frac{R_B}{R_A} = \frac{1}{1}$.
- [B] $\frac{R_B}{R_A} = \frac{2}{1}$.
- [C] $\frac{R_B}{R_A} = \frac{1}{2}$.
- [D] $\frac{R_B}{R_A} = \frac{1}{4}$.

(7) 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^2/F.
- [D] $D \cdot F^2$.

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

- [A] 100 V.
- [B] 1 V.
- [C] 40 V.
- [D] 4 V.

(9) 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] 60 J.
- [B] 15 J.
- [C] 120 J.

D 30 J.

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

A 25 Ω.

B 100 Ω.

C 50 Ω.

D 0 Ω.

(11) 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 $\frac{R_Y}{R_X} = \frac{1}{4}$.

(12) The unit of current is:

A watt.

B volt.

C ampere.

D coulomb.

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

A I^2R/t.

B IRt.

C IR^2t.

D I^2Rt.

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

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

B The current through each resistor is the same.

C The voltage across each resistor is the same.

D The power dissipated by each resistor is the same.

(15) The unit of resistivity is:

A ohm.

B ohm·m.

C ohm/m.

D ohm/m^2.

(16) 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 $R = \frac{A}{\rho L}$.

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

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

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

(17) 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.

(18) Joule/coulomb is same as:

A ampere.

B volt.

C watt.

D ohm.

(19) Complete the following statement: "The electromotive force is:

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

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

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

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

(20) A positive charge released from rest:

A does not move.

B moves towards the regions of lower potential.

C moves towards the regions of higher potential.

D moves towards the regions of equal potential.

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

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

B The voltage across each resistor is the same.

C The power dissipated by each resistor is the same.

D The current through each resistor is the same.

(22) In Figure 1 at the end of the text, the resistance across AB is:

A 0.5 Ω.

B 2 Ω.

C 4 Ω.

D 1 Ω.

(23) The current in a wire:

A depends on both resistance and potential difference.

B does not depend on resistance and potential difference.

C depends only on the potential difference applied.

D depends only on the resistance of the wire.

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

A 5 W.

B 0.5 W.

C 2 W.

D 0.2 W.

(25) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Power.

B Current.

C Voltage.

D Resistance.

(26) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 20 W.

B 5 W.

C 15 W.

D 10 W.

(27) 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/P.

C $D \cdot P^2$.

D $D^2 \cdot P$.

(28) When there is an electric current passing through a wire, the particles moving are:

A ions.

B protons.

C electrons.

D atoms.

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

A potential difference = current $\times$ resistance.

B potential difference / current = constant.

C current = resistance $\times$ potential difference.

D current / potential difference = constant.

(30) All of the wires in Figure 3 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 (c).

C (a).

D (d).

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

A 30 Ω.

B 270 Ω.

C 810 Ω.

D 10 Ω.

(32) The resistivity of a wire depends on:

A material.

B length.

C length, material and area of cross-section.

D area of cross-section.

(33) In Figure 4 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 3 Ω , 6 Ω and Ω are in parallel.

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

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

A 6.4×10^{18}.

B 2.2×10^{20}.

C 36.

D 4.8×10^{15}.

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

A To the right.

B Upward.

C Downward.

D To the left.

(36) Determine which of the graphs in Figure 6 at the end of the text represents Ohm's law for a solid conductor.

A (c).

B (a).

C (b).

D (d).

(37) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the resistance of the wire.

A 1.7 Ω.

B 0.4 Ω.

C 0.8 Ω.

D 1 Ω.

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

A time.

B power.

C energy.

D current.

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

A 100 Ω.

B 25 Ω.

C 0 Ω.

D 50 Ω.

(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 2 Ω.

D 3 Ω.

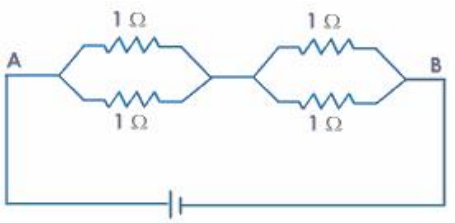


Figura 1

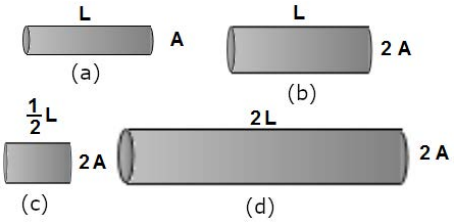
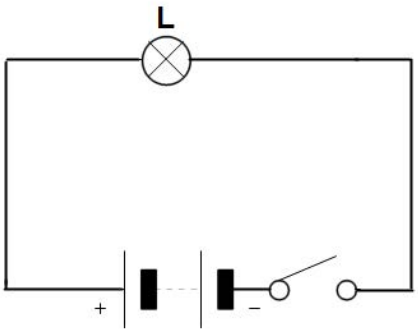


Figura 3



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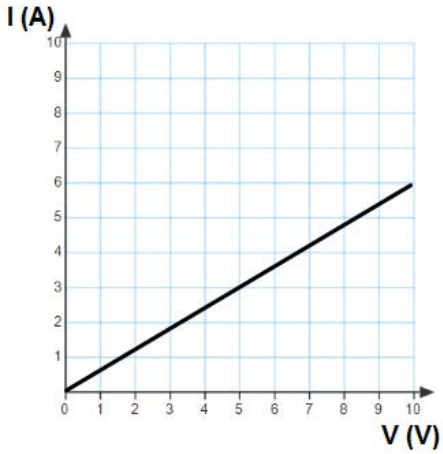


Figura 2

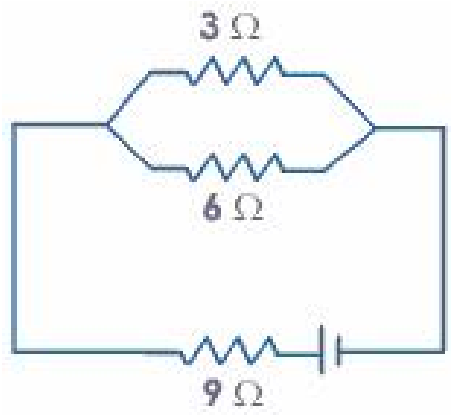


Figura 4

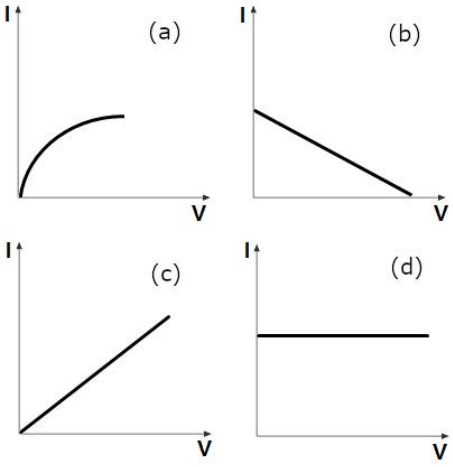


Figura 6

Buon compito ☺

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

Versione 12 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) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

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

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

(2) The resistivity of a wire depends on:

A material.

B length.

C area of cross-section.

D length, material and area of cross-section.

(3) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 20 W.

B 10 W.

C 5 W.

D 15 W.

(4) 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 60 J.

B 120 J.

C 30 J.

D 15 J.

(5) A positive charge released from rest:

A moves towards the regions of equal potential.

B moves towards the regions of lower potential.

C moves towards the regions of higher potential.

D does not move.

(6) The unit of resistivity is:

A ohm/m^2.

B ohm·m.

C ohm/m.

D ohm.

(7) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

A 1 Ω.

B 0.8 Ω.

C 0.4 Ω.

D 1.7 Ω.

(8) 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 I^2R/t.

D IR^2t.

(9) The unit of electric power is:

A ampere.

B joule.

C watt.

D volt.

(10) All of the wires in Figure 2 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (c).

B (a).

C (b).

D (d).

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

A 5 W.

B 0.2 W.

C 2 W.

D 0.5 W.

(12) The unit of current is:

A coulomb.

B volt.

C ampere.

D watt.

(13) A battery is used to:

A measure electric current.

B safeguard against short-circuit.

C measure electric potential.

D maintain a potential difference.

(14) 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.

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

A current = resistance $\times$ potential difference.

B potential difference / current = constant.

C potential difference = current $\times$ resistance.

D current / potential difference = constant.

(16) 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 $R = \dfrac{\rho A}{L}$.

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

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

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

(17) Joule/coulomb is same as:

A volt.

B ampere.

C watt.

D ohm.

(18) 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 500 C.

B 400 C.

C 200 C.

D 600 C.

(19) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 3 at the end of the text.

A Downward.

B To the right.

C To the left.

D Upward.

(20) 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 2 Ω.

B 6 Ω.

C 1 Ω.

D 3 Ω.

(21) 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 810 Ω.

D 30 Ω.

(22) 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 $\dfrac{R_Y}{R_X} = \dfrac{1}{2}$.

B $\dfrac{R_Y}{R_X} = \dfrac{2}{1}$.

C $\dfrac{R_Y}{R_X} = \dfrac{1}{4}$.

D $\dfrac{R_Y}{R_X} = \dfrac{1}{1}$.

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

A 25 Ω.

B 100 Ω.

C 0 Ω.

D 50 Ω.

(24) When there is an electric current passing through a wire, the particles moving are:

A atoms.

B ions.

C protons.

D electrons.

(25) 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 4.8×10^{15}.

C 36.

D 6.4×10^{18}.

(26) 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 6 Ω.

D 3 Ω.

(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 $D \cdot F$.

B D^2/F.

C $D^2 \cdot F$.

D $D \cdot F^2$.

(28) In Figure 4 at the end of the text, the resistance across AB is:

A 0.5 Ω.

B 2 Ω.

C 4 Ω.

D 1 Ω.

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

A 50 Ω.

B 100 Ω.

C 0 Ω.

D 25 Ω.

(30) The current in a wire:

A depends only on the resistance of the wire.

B depends only on the potential difference applied.

C depends on both resistance and potential difference.

D does not depend on resistance and potential difference.

(31) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A power.

B potential difference.

C current.

D resistance.

(32) Determine which of the graphs in Figure 5 at the end of the text represents Ohm's law for a solid conductor.

A (a).

B (b).

C (d).

D (c).

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

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

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

C all in series.

D all in parallel.

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

A The power dissipated by each resistor is the same.

B The voltage across each resistor is the same.

C The current through each resistor is the same.

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

(35) 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^2/P.

B $D^2 \cdot P$.

C $D \cdot P^2$.

D $D \cdot P$.

(36) In Figure 6 at the end of the text,

A 3 Ω , 6 Ω and Ω are in parallel.

B 6 Ω, 3 Ω and 9 Ω are in series.

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

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

(37) Complete the following statement: "The electromotive force is:

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

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

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

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

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

A 4 V.

B 1 V.

C 100 V.

D 40 V.

39 Ohm's law relates potential difference with:

A energy.

B power.

C current.

D time.

40 Determine which one of the following statements concerning resistors in series is *true*.

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

B The power dissipated by each resistor is the same.

C The current through each resistor is the same.

D The voltage across each resistor is the same.

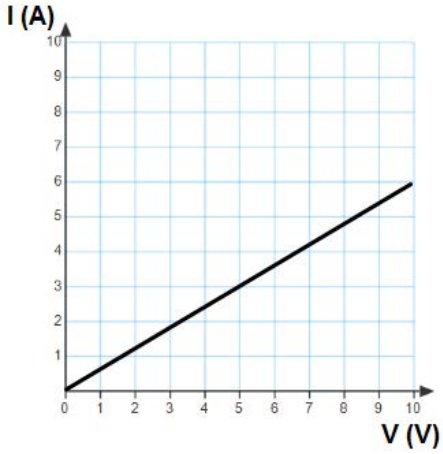


Figura 1

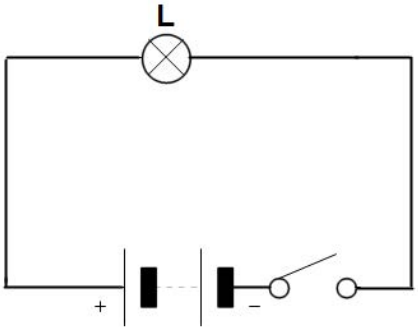
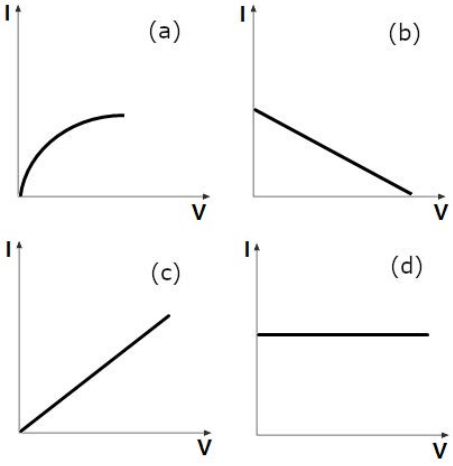


Figura 3



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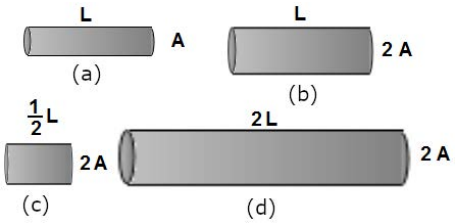

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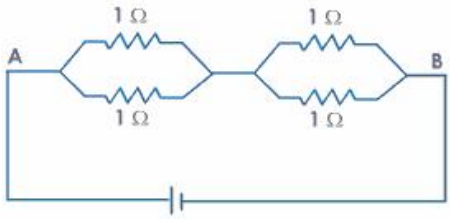


Figura 4

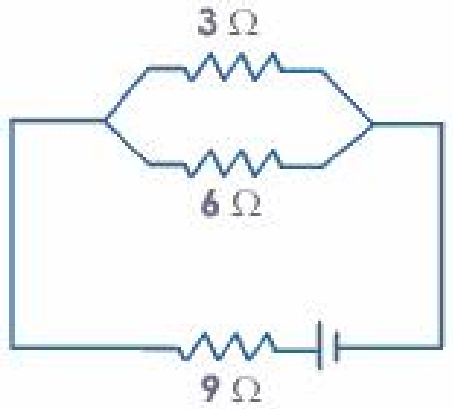


Figura 6

Buon compito ☺

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

Versione 13 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] ions.
- [B] electrons.
- [C] atoms.
- [D] protons.

(2) 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.

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

- [A] The current through each resistor is the same.
- [B] The total voltage across the resistors is the sum of the voltage across each resistor.
- [C] The power dissipated by each resistor is the same.
- [D] The voltage across each resistor is the same.

(4) 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] 120 J.
- [D] 15 J.

(5) In Figure 1 at the end of the text, the resistance across *AB* is:

- [A] 1 Ω.
- [B] 4 Ω.
- [C] 0.5 Ω.
- [D] 2 Ω.

(6) A battery is used to:

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

(7) 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] $\frac{R_B}{R_A} = \frac{1}{1}$.
- [B] $\frac{R_B}{R_A} = \frac{2}{1}$.
- [C] $\frac{R_B}{R_A} = \frac{1}{4}$.
- [D] $\frac{R_B}{R_A} = \frac{1}{2}$.

(8) The unit of current is:

- [A] volt.
- [B] ampere.
- [C] watt.
- [D] coulomb.

(9) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 2 at the end of the text.

- [A] To the right.
- [B] To the left.
- [C] Downward.
- [D] Upward.

(10) 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^2/P.

B $D \cdot P$.

C $D^2 \cdot P$.

D $D \cdot P^2$.

(11) 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 $D \cdot F$.

B $D \cdot F^2$.

C D^2/F.

D $D^2 \cdot F$.

(12) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A resistance.

B current.

C potential difference.

D power.

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

A 1 Ω.

B 2 Ω.

C 3 Ω.

D 6 Ω.

(14) A positive charge released from rest:

A moves towards the regions of equal potential.

B moves towards the regions of lower potential.

C does not move.

D moves towards the regions of higher potential.

(15) 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 810 Ω.

C 270 Ω.

D 30 Ω.

(16) Complete the following statement: "The electromotive force is:

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

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

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

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

(17) 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 $R = \dfrac{L}{\rho A}$.

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

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

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

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

A 4.8×10^{15}.

B 36.

C 2.2×10^{20}.

D 6.4×10^{18}.

(19) 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 0.8 Ω.

C 1 Ω.

D 0.4 Ω.

(20) 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 20 W.

B 5 W.

C 10 W.

D 15 W.

(21) Determine which of the graphs in Figure 4 at the end of the text represents Ohm's law for a solid conductor.

A (a).

B (c).

C (b).

D (d).

(22) All of the wires in Figure 5 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (d).

B (a).

C (b).

D (c).

(23) 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 200 C.

B 600 C.

C 500 C.

D 400 C.

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

A 50 Ω.

B 25 Ω.

C 0 Ω.

D 100 Ω.

(25) The unit of resistivity is:

A ohm/m^2.

B ohm·m.

C ohm/m.

D ohm.

(26) Two resistors $R_1 = 6$ Ω and $R_2 = 12$ Ω are connected in parallel to each other and in series to $R_2 = 2$ Ω. Compute the net resistance in the circuit.

A 3 Ω.

B 6 Ω.

C 1 Ω.

D 2 Ω.

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

A potential difference = current × resistance.

B current / potential difference = constant.

C potential difference / current = constant.

D current = resistance × potential difference.

(28) The resistivity of a wire depends on:

A length.

B length, material and area of cross-section.

C material.

D area of cross-section.

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

A 1 V.

B 4 V.

C 40 V.

D 100 V.

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

A IR^2t.

B IRt.

C I^2Rt.

D I^2R/t.

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

A 0.5 W.

B 2 W.

C 0.2 W.

D 5 W.

(32) The current in a wire:

A depends on both resistance and potential difference.

B depends only on the resistance of the wire.

C does not depend on resistance and potential difference.

D depends only on the potential difference applied.

(33) 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 $\frac{R_Y}{R_X} = \frac{1}{2}$.

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

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

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

(34) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Voltage.

B Resistance.

C Power.

D Current.

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

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

B The current through each resistor is the same.

C The voltage across each resistor is the same.

D The power dissipated by each resistor is the same.

(36) In Figure 6 at the end of the text,

A 3 Ω , 6 Ω and Ω are in parallel.

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 are in parallel and 9 Ω is in series.

(37) Joule/coulomb is same as:

A watt.

B ohm.

C volt.

D ampere.

38 The unit of electric power is:

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

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

A 0 Ω.
B 25 Ω.
C 100 Ω.
D 50 Ω.

40 Ohm's law relates potential difference with:

A power.
B time.
C current.
D energy.

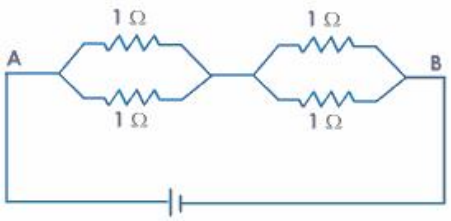


Figura 1

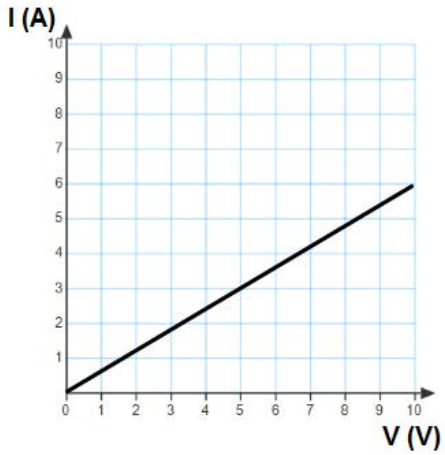


Figura 3

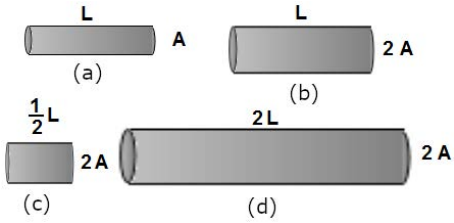


Figura 5

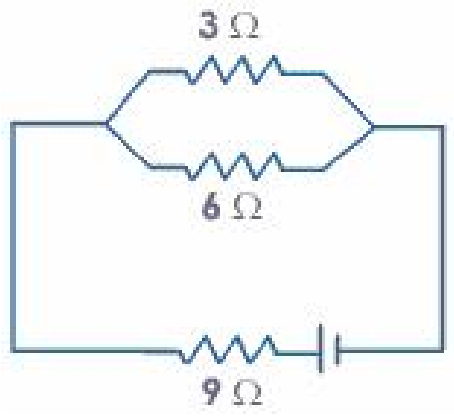


Figura 6

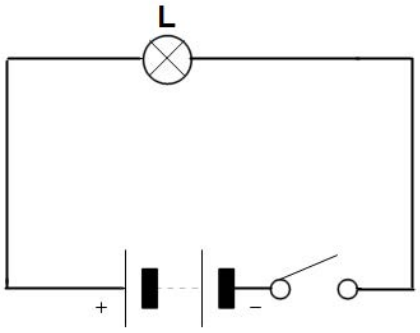


Figura 2

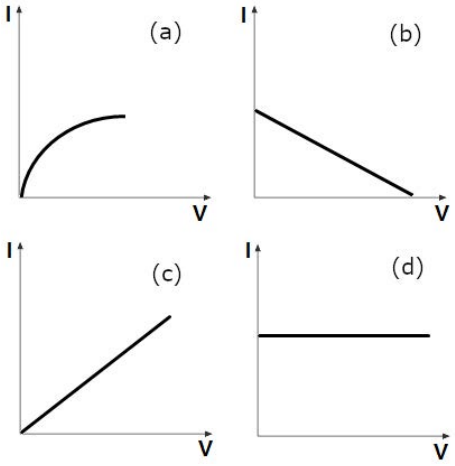


Figura 4

Buon compito ☺

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

Versione 14 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) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

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

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

(2) All of the wires in Figure 1 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (d).

B (b).

C (c).

D (a).

(3) Determine which one of the following statements concerning resistors in parallel 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 voltage across the resistors is the sum of the voltage across each resistor.

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

A Power.

B Voltage.

C Resistance.

D Current.

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

A The current through each resistor is the same.

B The power dissipated by each resistor is the same.

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

D The voltage across each resistor is the same.

(6) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A potential difference.

B resistance.

C current.

D power.

(7) 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/F.

B $D \cdot F$.

C $D^2 \cdot F$.

D $D \cdot F^2$.

(8) 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 $R = \frac{A}{\rho L}$.

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

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

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

(9) Joule/coulomb is same as:

A volt.

B watt.

C ampere.

D ohm.

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

A current / potential difference = constant.

B potential difference = current $\times$ resistance.

C current = resistance $\times$ potential difference.

D potential difference / current = constant.

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

A 0 Ω.

B 25 Ω.

C 50 Ω.

D 100 Ω.

(12) A positive charge released from rest:

A moves towards the regions of lower potential.

B moves towards the regions of higher potential.

C does not move.

D moves towards the regions of equal potential.

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

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

B all in series.

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

D all in parallel.

(14) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 2 at the end of the text.

A To the right.

B Downward.

C Upward.

D To the left.

(15) Complete the following statement: "The electromotive force is:

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

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

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

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

(16) 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 1 Ω.

B 6 Ω.

C 3 Ω.

D 2 Ω.

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

A time.

B current.

C power.

D energy.

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

A 5 W.

B 0.2 W.

C 0.5 W.

D 2 W.

(19) A battery is used to:

A measure electric potential.

B safeguard against short-circuit.

C maintain a potential difference.

D measure electric current.

(20) 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 0.8 Ω.

B 1.7 Ω.

C 0.4 Ω.

D 1 Ω.

(21) The current in a wire:

A depends on both resistance and potential difference.

B depends only on the potential difference applied.

C does not depend on resistance and potential difference.

D depends only on the resistance of the wire.

(22) The unit of resistivity is:

A ohm·m.

B ohm.

C ohm/m^2.

D ohm/m.

(23) In Figure 4 at the end of the text,

A 6 Ω, 3 Ω and 9 Ω are in series.

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

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

D 3 Ω , 6 Ω and Ω are in parallel.

(24) 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 20 W.

B 15 W.

C 10 W.

D 5 W.

(25) In Figure 5 at the end of the text, the resistance across AB is:

A 4 Ω.

B 0.5 Ω.

C 1 Ω.

D 2 Ω.

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

A 100 V.

B 4 V.

C 1 V.

D 40 V.

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

A I^2Rt.

B IR^2t.

C IRt.

D I^2R/t.

(28) 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^2/P.

D $D \cdot P^2$.

(29) Determine which of the graphs in Figure 6 at the end of the text represents Ohm's law for a solid conductor.

A (d).

B (c).

C (a).

D (b).

(30) The resistivity of a wire depends on:

A area of cross-section.

B material.

C length, material and area of cross-section.

D length.

(31) 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 15 J.

C 120 J.

D 60 J.

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

A 270 Ω.

B 810 Ω.

C 30 Ω.

D 10 Ω.

(33) The unit of current is:

A ampere.

B coulomb.

C volt.

D watt.

(34) 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 $\frac{R_Y}{R_X} = \frac{1}{4}$.

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

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

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

(35) 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.

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

A 1 Ω.

B 6 Ω.

C 3 Ω.

D 2 Ω.

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

A 0 Ω.

B 50 Ω.

C 100 Ω.

D 25 Ω.

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

A 36.

B 2.2×10^{20}.

C 6.4×10^{18}.

D 4.8×10^{15}.

39 The unit of electric power is:

A ampere.

B volt.

C watt.

D joule.

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

A atoms.

B ions.

C electrons.

D protons.

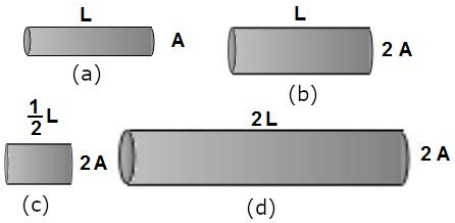


Figura 1

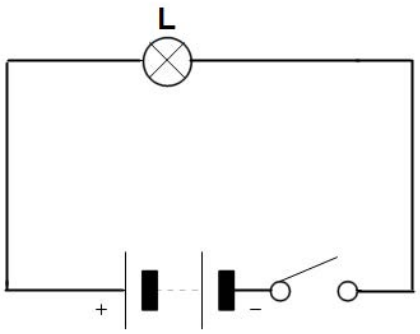
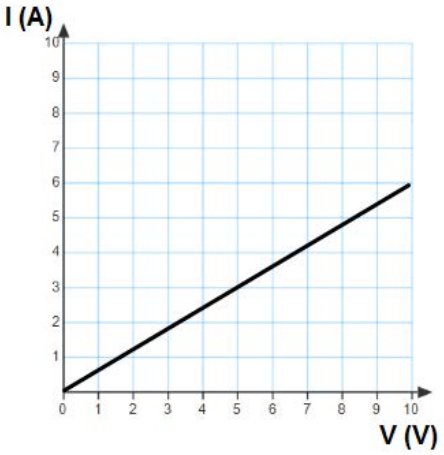


Figura 2



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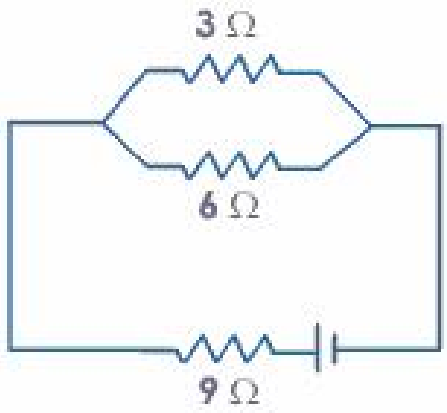

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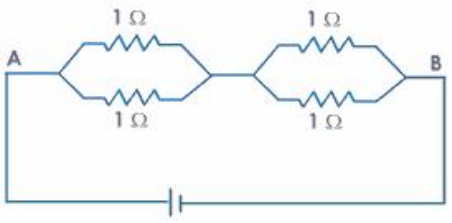


Figura 5

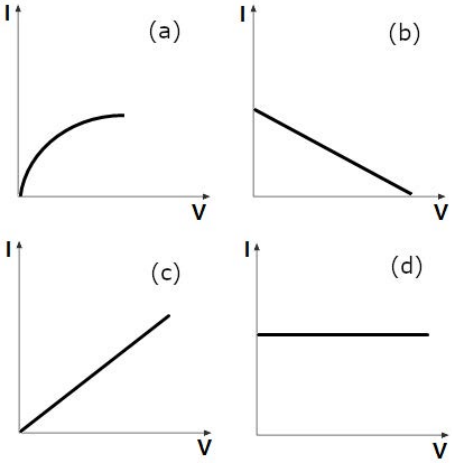


Figura 6

Buon compito ☺

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

Versione 15 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) The resistivity of a wire depends on:

- [A] area of cross-section.
- [B] length, material and area of cross-section.
- [C] length.
- [D] material.

(2) 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] $1\ \Omega$.
- [B] $2\ \Omega$.
- [C] $6\ \Omega$.
- [D] $3\ \Omega$.

(3) A battery is used to:

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

(4) A positive charge released from rest:

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

(5) 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] $D \cdot P^2$.
- [C] $D^2 \cdot P$.
- [D] D^2/P.

(6) When there is an electric current passing through a wire, the particles moving are:

- [A] electrons.
- [B] atoms.
- [C] protons.
- [D] ions.

(7) 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 left.
- [B] Downward.
- [C] Upward.
- [D] To the right.

(8) 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] 4.8×10^{15}.
- [C] 36.
- [D] 6.4×10^{18}.

(9) 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.

(10) In Figure 2 at the end of the text,

- [A] $3\ \Omega$, $6\ \Omega$ are in parallel and $9\ \Omega$ is in series.
- [B] $6\ \Omega$, $3\ \Omega$ and $9\ \Omega$ 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.

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

A 0 Ω.

B 100 Ω.

C 25 Ω.

D 50 Ω.

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

A time.

B energy.

C power.

D current.

(13) The unit of electric power is:

A ampere.

B volt.

C watt.

D joule.

(14) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Current.

B Power.

C Resistance.

D Voltage.

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

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

B The power dissipated by each resistor is the same.

C The voltage across each resistor is the same.

D The current through each resistor is the same.

(16) 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 Ω.

B 0.4 Ω.

C 0.8 Ω.

D 1.7 Ω.

(17) The current in a wire:

A depends only on the potential difference applied.

B depends only on the resistance of the wire.

C depends on both resistance and potential difference.

D does not depend on resistance and potential difference.

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

A I^2Rt.

B IR^2t.

C I^2R/t.

D IRt.

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

A 50 Ω.

B 100 Ω.

C 0 Ω.

D 25 Ω.

(20) Two resistors $R_1 = 3$ Ω and $R_2 = 6$ Ω are connected in parallel. Compute the net resistance in the circuit.

A 1 Ω.

B 3 Ω.

C 2 Ω.

D 6 Ω.

(21) Joule/coulomb is same as:

A ampere.

B ohm.

C volt.

D watt.

(22) 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 $D \cdot F$.

B D^2/F.

C $D \cdot F^2$.

D $D^2 \cdot F$.

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

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

B all in parallel.

C all in series.

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

(24) Determine which of the graphs in Figure 4 at the end of the text represents Ohm's law for a solid conductor.

A (b).

B (a).

C (c).

D (d).

(25) 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] $R = \dfrac{\rho A}{L}$.

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

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

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

(26) 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] $\dfrac{R_B}{R_A} = \dfrac{2}{1}$.

[B] $\dfrac{R_B}{R_A} = \dfrac{1}{1}$.

[C] $\dfrac{R_B}{R_A} = \dfrac{1}{4}$.

[D] $\dfrac{R_B}{R_A} = \dfrac{1}{2}$.

(27) 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] 400 C.

[B] 500 C.

[C] 600 C.

[D] 200 C.

(28) All of the wires in Figure 5 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] (d).

[D] (c).

(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] 15 J.

[C] 120 J.

[D] 60 J.

(30) 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] $\dfrac{R_Y}{R_X} = \dfrac{2}{1}$.

[B] $\dfrac{R_Y}{R_X} = \dfrac{1}{2}$.

[C] $\dfrac{R_Y}{R_X} = \dfrac{1}{1}$.

[D] $\dfrac{R_Y}{R_X} = \dfrac{1}{4}$.

(31) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

[A] power.

[B] potential difference.

[C] resistance.

[D] current.

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

[A] 0.2 W.

[B] 0.5 W.

[C] 5 W.

[D] 2 W.

(33) In Figure 6 at the end of the text, the resistance across AB is:

[A] 4 Ω.

[B] 2 Ω.

[C] 1 Ω.

[D] 0.5 Ω.

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

[A] 100 V.

[B] 40 V.

[C] 4 V.

[D] 1 V.

(35) The unit of current is:

[A] coulomb.

[B] ampere.

[C] watt.

[D] volt.

(36) Complete the following statement: “The electromotive force is:

[A] the maximum potential difference between the terminals of a battery”.

[B] the force that accelerates protons through a wire when a battery is connected to it”.

[C] the force that accelerates electrons through a wire when a battery is connected to it”.

[D] the maximum electric potential energy stored within a battery”.

(37) 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] 20 W.

[B] 15 W.

[C] 5 W.

D 10 W.

38 The unit of resistivity is:

A ohm.

B ohm/m^2.

C ohm/m.

D ohm·m.

39 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.

40 Determine which of the following statements does not represent Ohm's law.

A current = resistance × potential difference.

B potential difference = current × resistance.

C potential difference / current = constant.

D current / potential difference = constant.

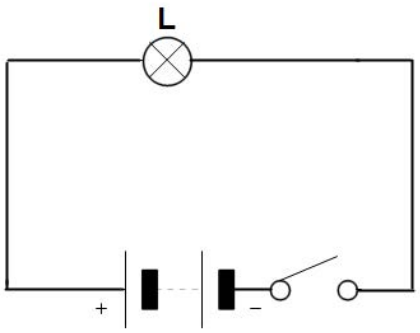


Figura 1

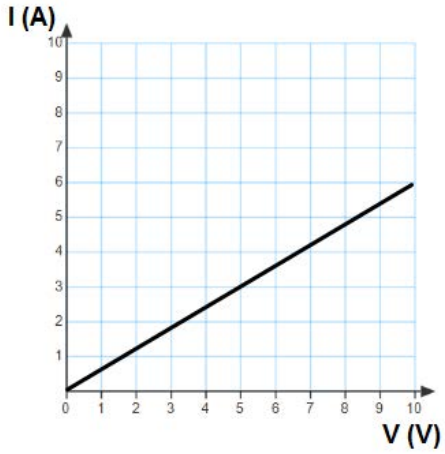


Figura 3

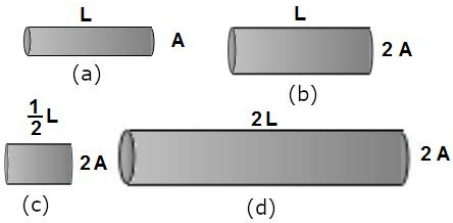


Figura 5

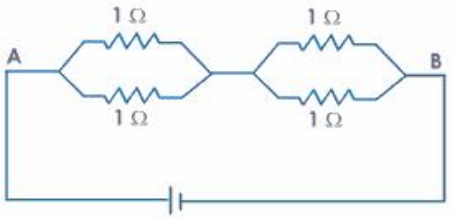


Figura 6

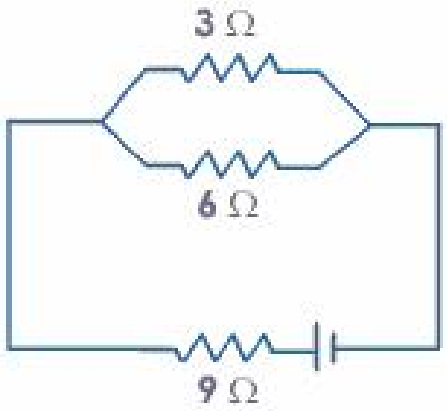


Figura 2

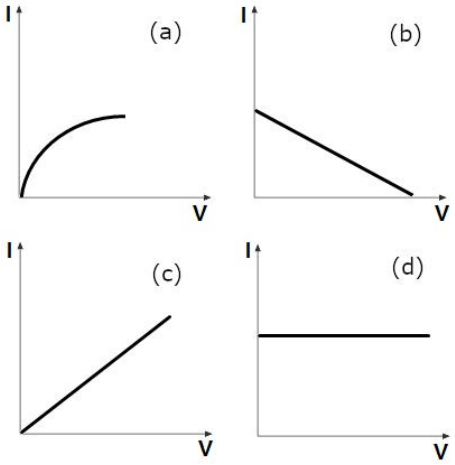


Figura 4

Buon compito ☺

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

Versione 16 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) Determine which of the following statements does not represent Ohm's law.

- [A] potential difference = current × resistance.
- [B] potential difference / current = constant.
- [C] current / potential difference = constant.
- [D] current = resistance × potential difference.

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

- [A] 3 Ω.
- [B] 2 Ω.
- [C] 1 Ω.
- [D] 6 Ω.

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

- [A] 25 Ω.
- [B] 50 Ω.
- [C] 0 Ω.
- [D] 100 Ω.

(4) Joule/coulomb is same as:

- [A] ohm.
- [B] volt.
- [C] watt.
- [D] ampere.

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

- [A] 1 V.
- [B] 100 V.
- [C] 40 V.
- [D] 4 V.

(6) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

- [A] 1 Ω.
- [B] 0.4 Ω.
- [C] 0.8 Ω.
- [D] 1.7 Ω.

(7) 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] 500 C.
- [B] 400 C.
- [C] 600 C.
- [D] 200 C.

(8) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 2 at the end of the text.

- [A] To the left.
- [B] To the right.
- [C] Upward.
- [D] Downward.

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

- [A] time.
- [B] energy.
- [C] current.
- [D] power.

(10) In Figure 3 at the end of the text,

- [A] 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω.

B 6 Ω, 3 Ω and 9 Ω are in series.

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

D 3 Ω , 6 Ω and Ω are in parallel.

(11) The unit of current is:

A ampere.

B coulomb.

C watt.

D volt.

(12) Determine which of the graphs in Figure 4 at the end of the text represents Ohm's law for a solid conductor.

A (d).

B (b).

C (a).

D (c).

(13) 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^2/F.

D $D \cdot F^2$.

(14) Complete the following statement: "The electromotive force is:

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

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

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

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

(15) 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 6.4×10^{18}.

C 4.8×10^{15}.

D 36.

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

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

B The current through each resistor is the same.

C The power dissipated by each resistor is the same.

D The voltage across each resistor is the same.

(17) 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 $D^2 \cdot P$.

B $D \cdot P$.

C $D \cdot P^2$.

D D^2/P.

(18) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

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

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

(19) All of the wires in Figure 5 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).

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

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

B all in series.

C all in parallel.

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

(21) 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 $\frac{R_Y}{R_X} = \frac{1}{4}$.

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

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

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

(22) The resistivity of a wire depends on:

A area of cross-section.

B material.

C length.

D length, material and area of cross-section.

(23) The unit of electric power is:

A volt.

B watt.

C ampere.

D joule.

(24) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A power.

B potential difference.

C resistance.

D current.

(25) The current in a wire:

A depends only on the potential difference applied.

B depends on both resistance and potential difference.

C depends only on the resistance of the wire.

D does not depend on resistance and potential difference.

(26) A battery is used to:

A measure electric current.

B measure electric potential.

C safeguard against short-circuit.

D maintain a potential difference.

(27) The unit of resistivity is:

A ohm.

B ohm/m^2.

C ohm/m.

D ohm·m.

(28) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Resistance.

B Power.

C Voltage.

D Current.

(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 15 J.

B 30 J.

C 60 J.

D 120 J.

(30) 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 2 Ω.

B 3 Ω.

C 1 Ω.

D 6 Ω.

(31) 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 $R = \dfrac{L}{\rho A}$.

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

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

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

(32) When there is an electric current passing through a wire, the particles moving are:

A electrons.

B atoms.

C ions.

D protons.

(33) In Figure 6 at the end of the text, the resistance across AB is:

A 1 Ω.

B 0.5 Ω.

C 4 Ω.

D 2 Ω.

(34) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 15 W.

B 10 W.

C 20 W.

D 5 W.

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

A 0.2 W.

B 0.5 W.

C 2 W.

D 5 W.

(36) A positive charge released from rest:

A does not move.

B moves towards the regions of higher potential.

C moves towards the regions of equal potential.

D moves towards the regions of lower potential.

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

A The current through each resistor is the same.

B The power dissipated by each resistor is the same.

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

D The voltage across each resistor is the same.

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

A IRt.

B I^2Rt.

C IR^2t.

D I^2R/t.

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

A 30 Ω.

B 270 Ω.

C 810 Ω.

D 10 Ω.

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

A 0 Ω.

B 100 Ω.

C 25 Ω.

D 50 Ω.

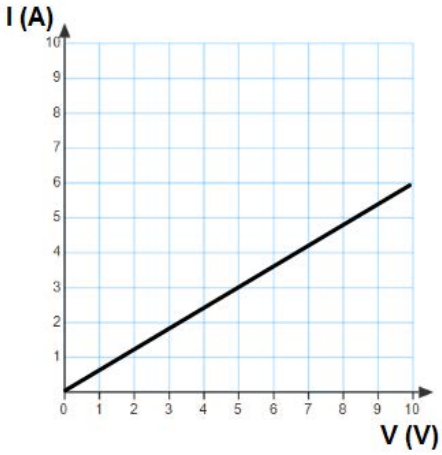
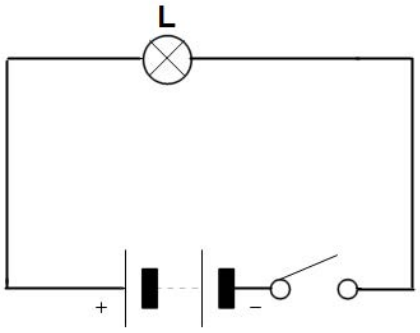


Figura 1



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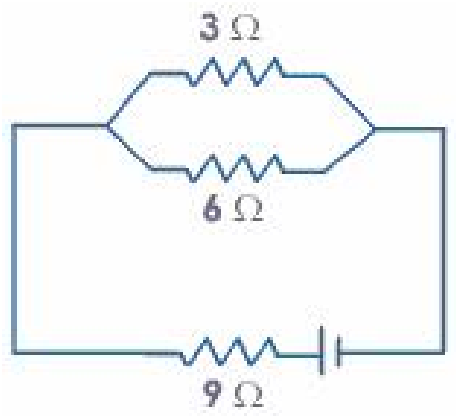

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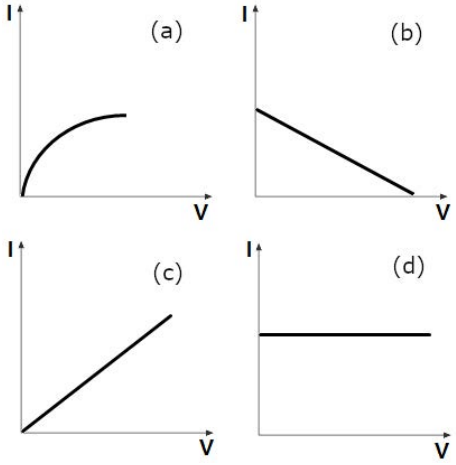

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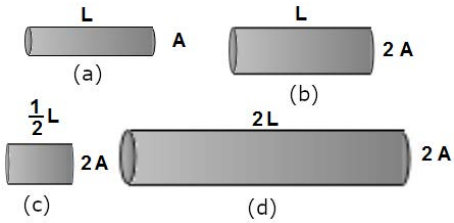


Figura 5

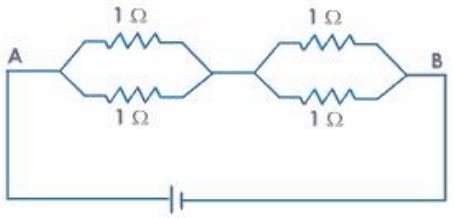


Figura 6

Buon compito ☺

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

Versione 17 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) 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 60 J.
B 120 J.
C 15 J.
D 30 J.

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

A 1 Ω.
B 2 Ω.
C 3 Ω.
D 6 Ω.

(3) 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 400 C.
B 500 C.
C 200 C.
D 600 C.

(4) 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 Downward.
B To the left.
C To the right.
D Upward.

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

A IR^2t.
B IRt.
C I^2R/t.
D I^2Rt.

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

A power.
B current.
C time.
D energy.

(7) 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 $R = \dfrac{\rho A}{L}$.
B $R = \dfrac{L}{\rho A}$.
C $R = \dfrac{A}{\rho L}$.
D $R = \dfrac{\rho L}{A}$.

(8) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

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

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

A 5 W.
B 0.2 W.
C 0.5 W.
D 2 W.

(10) A positive charge released from rest:

[A] moves towards the regions of equal potential.

[B] moves towards the regions of higher potential.

[C] does not move.

[D] moves towards the regions of lower potential.

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

[A] 6.4×10^{18}.

[B] 4.8×10^{15}.

[C] 2.2×10^{20}.

[D] 36.

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

[A] The voltage across each resistor is the same.

[B] The power dissipated by each resistor is the same.

[C] The current through each resistor is the same.

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

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

[A] 25 Ω.

[B] 50 Ω.

[C] 100 Ω.

[D] 0 Ω.

(14) The resistivity of a wire depends on:

[A] area of cross-section.

[B] material.

[C] length, material and area of cross-section.

[D] length.

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

[A] 810 Ω.

[B] 30 Ω.

[C] 270 Ω.

[D] 10 Ω.

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

[A] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

[B] all in series.

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

[D] all in parallel.

(17) All of the wires in Figure 2 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

[A] (c).

[B] (d).

[C] (a).

[D] (b).

(18) The unit of resistivity is:

[A] ohm/m^2.

[B] ohm·m.

[C] ohm/m.

[D] ohm.

(19) A battery is used to:

[A] safeguard against short-circuit.

[B] maintain a potential difference.

[C] measure electric current.

[D] measure electric potential.

(20) The current in a wire:

[A] depends only on the potential difference applied.

[B] depends on both resistance and potential difference.

[C] does not depend on resistance and potential difference.

[D] depends only on the resistance of the wire.

(21) In Figure 3 at the end of the text,

[A] 6 Ω, 3 Ω and 9 Ω are in series.

[B] 3 Ω , 6 Ω and Ω are in parallel.

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

[D] 3 Ω , 6 Ω are in parallel and 9 Ω is in series.

(22) The unit of current is:

[A] coulomb.

[B] watt.

[C] volt.

[D] ampere.

(23) 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] $D \cdot P^2$.

[B] D^2/P.

[C] $D \cdot P$.

[D] $D^2 \cdot P$.

(24) Complete the following statement: “The electromotive force is:

[A] the maximum electric potential energy stored within a battery”.

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

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

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

(25) 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 $\frac{R_B}{R_A} = \frac{1}{1}$.

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

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

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

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

A The power dissipated by each resistor is the same.

B The voltage across each resistor is the same.

C The current through each resistor is the same.

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

(27) When there is an electric current passing through a wire, the particles moving are:

A atoms.

B ions.

C protons.

D electrons.

(28) In Figure 4 at the end of the text, the resistance across AB is:

A 1 Ω.

B 2 Ω.

C 4 Ω.

D 0.5 Ω.

(29) The unit of electric power is:

A joule.

B ampere.

C watt.

D volt.

(30) Determine which of the graphs in Figure 5 at the end of the text represents Ohm's law for a solid conductor.

A (a).

B (c).

C (d).

D (b).

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

A 100 Ω.

B 0 Ω.

C 25 Ω.

D 50 Ω.

(32) 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 3 Ω.

C 2 Ω.

D 1 Ω.

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

A 40 V.

B 100 V.

C 1 V.

D 4 V.

(34) Joule/coulomb is same as:

A watt.

B volt.

C ohm.

D ampere.

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

A potential difference = current × resistance.

B current / potential difference = constant.

C current = resistance × potential difference.

D potential difference / current = constant.

(36) The electric current as a function of voltage of a wire is presented by the graph in Figure 6. Compute the resistance of the wire.

A 0.4 Ω.

B 1 Ω.

C 0.8 Ω.

D 1.7 Ω.

(37) 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 $D \cdot F$.

B D^2/F.

C $D \cdot F^2$.

D $D^2 \cdot F$.

(38) The electric current as a function of voltage of a wire is presented by the graph in Figure 6. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 20 W.

B 15 W.

C 10 W.

D 5 W.

(39) 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 $\frac{R_Y}{R_X} = \frac{1}{1}$.

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

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

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

(40) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Resistance.

B Current.

C Power.

D Voltage.

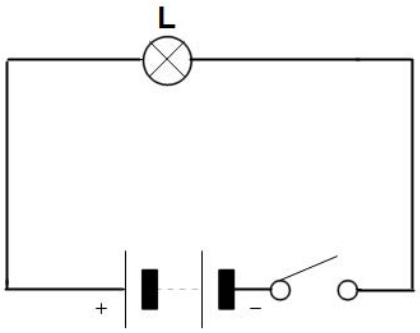


Figura 1

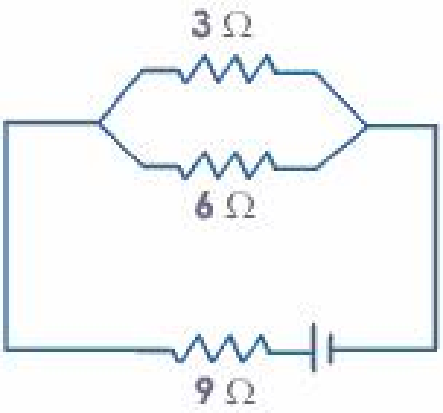


Figura 3

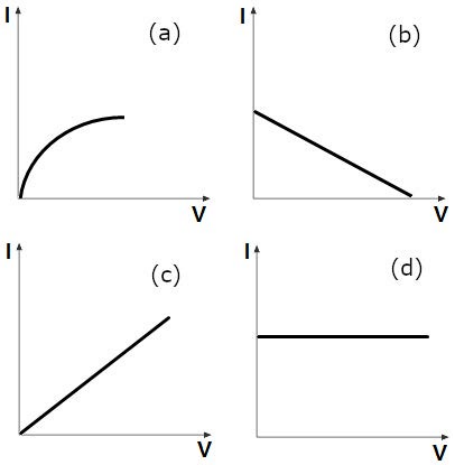


Figura 5

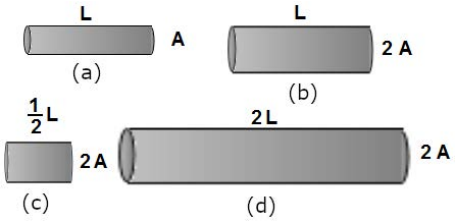


Figura 2

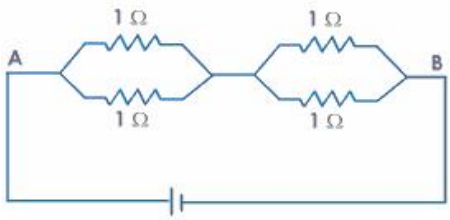


Figura 4

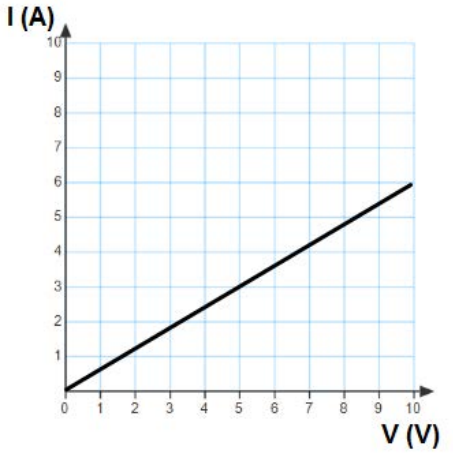


Figura 6

Buon compito ☺

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

Versione 18 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 a current I flows through a resistance R for time t the electrical energy spent is given by:

- [A] I^2R/t.
- [B] I^2Rt.
- [C] IRt.
- [D] IR^2t.

(2) When there is an electric current passing through a wire, the particles moving are:

- [A] ions.
- [B] atoms.
- [C] protons.
- [D] electrons.

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

- [A] The voltage across each resistor is the same.
- [B] The power dissipated by each resistor is the same.
- [C] The current through each resistor is the same.
- [D] The total voltage across the resistors is the sum of the voltage across each resistor.

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

- [A] 0.2 W.
- [B] 5 W.
- [C] 0.5 W.
- [D] 2 W.

(5) 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] $D^2 \cdot P$.
- [B] $D \cdot P^2$.
- [C] D^2/P.
- [D] $D \cdot P$.

(6) The unit of electric power is:

- [A] volt.
- [B] joule.
- [C] ampere.
- [D] watt.

(7) 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] $\frac{R_B}{R_A} = \frac{1}{2}$.
- [C] $\frac{R_B}{R_A} = \frac{1}{1}$.
- [D] $\frac{R_B}{R_A} = \frac{2}{1}$.

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

- [A] The total current through the resistors is the sum of the current through each resistor.
- [B] The voltage across each resistor is the same.
- [C] The current through each resistor is the same.
- [D] The power dissipated by each resistor is the same.

(9) 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/F.
- [B] $D \cdot F^2$.
- [C] $D^2 \cdot F$.

D $D \cdot F$.

(10) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

A 1 Ω.

B 0.8 Ω.

C 0.4 Ω.

D 1.7 Ω.

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

A potential difference = current × resistance.

B potential difference / current = constant.

C current / potential difference = constant.

D current = resistance × potential difference.

(12) 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 $R = \dfrac{L}{\rho A}$.

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

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

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

(13) The resistivity of a wire depends on:

A material.

B length.

C length, material and area of cross-section.

D area of cross-section.

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

A 270 Ω.

B 10 Ω.

C 30 Ω.

D 810 Ω.

(15) In Figure 2 at the end of the text,

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

B 3 Ω , 6 Ω and Ω are in parallel.

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

D 6 Ω, 3 Ω and 9 Ω are in series.

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

A 100 Ω.

B 0 Ω.

C 50 Ω.

D 25 Ω.

(17) The current in a wire:

A depends on both resistance and potential difference.

B does not depend on resistance and potential difference.

C depends only on the potential difference applied.

D depends only on the resistance of the wire.

(18) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 20 W.

B 5 W.

C 15 W.

D 10 W.

(19) A battery is used to:

A measure electric current.

B maintain a potential difference.

C safeguard against short-circuit.

D measure electric potential.

(20) Two resistors $R_1 = 3$ Ω and $R_2 = 6$ Ω are connected in parallel. Compute the net resistance in the circuit.

A 1 Ω.

B 3 Ω.

C 6 Ω.

D 2 Ω.

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

A 100 Ω.

B 0 Ω.

C 25 Ω.

D 50 Ω.

(22) 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 200 C.

B 600 C.

C 500 C.

D 400 C.

(23) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A power.

B resistance.

C potential difference.

D current.

(24) Complete the following statement: "The electromotive force is:

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

[B] the maximum potential difference between the terminals of a battery".

[C] the maximum electric potential energy stored within a battery".

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

(25) The unit of current is:

[A] volt.

[B] watt.

[C] ampere.

[D] coulomb.

(26) The unit of resistivity is:

[A] ohm·m.

[B] ohm/m.

[C] ohm/m^2.

[D] ohm.

(27) 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] 1 Ω.

[B] 6 Ω.

[C] 3 Ω.

[D] 2 Ω.

(28) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

[A] (b).

[B] (d).

[C] (a).

[D] (c).

(29) Joule/coulomb is same as:

[A] ohm.

[B] watt.

[C] volt.

[D] ampere.

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

[A] current.

[B] power.

[C] energy.

[D] time.

(31) In Figure 4 at the end of the text, the resistance across AB is:

[A] 0.5 Ω.

[B] 1 Ω.

[C] 2 Ω.

[D] 4 Ω.

(32) All of the wires in Figure 5 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

[A] (d).

[B] (a).

[C] (b).

[D] (c).

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

[A] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

[B] all in series.

[C] all in parallel.

[D] 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.

(34) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

[A] Voltage.

[B] Resistance.

[C] Power.

[D] Current.

(35) 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] $\frac{R_Y}{R_X} = \frac{1}{1}$.

[B] $\frac{R_Y}{R_X} = \frac{1}{4}$.

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

[D] $\frac{R_Y}{R_X} = \frac{1}{2}$.

(36) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 6 at the end of the text.

[A] To the left.

[B] Downward.

[C] To the right.

[D] Upward.

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

[A] 100 V.

[B] 1 V.

[C] 40 V.

[D] 4 V.

(38) 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] 60 J.

[B] 30 J.

[C] 120 J.

[D] 15 J.

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

[A] 36.

[B] 4.8×10^{15}.

[C] 2.2×10^{20}.

[D] 6.4×10^{18}.

(40) A positive charge released from rest:

[A] moves towards the regions of lower potential.

[B] moves towards the regions of equal potential.

[C] does not move.

[D] moves towards the regions of higher potential.

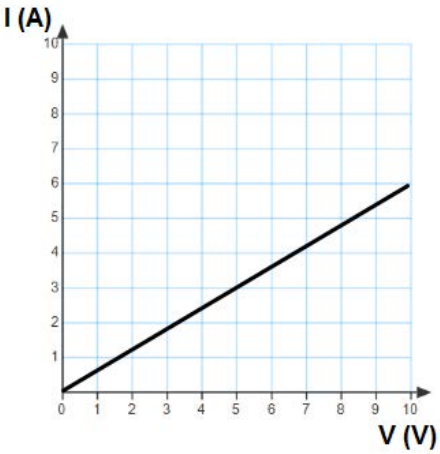


Figura 1

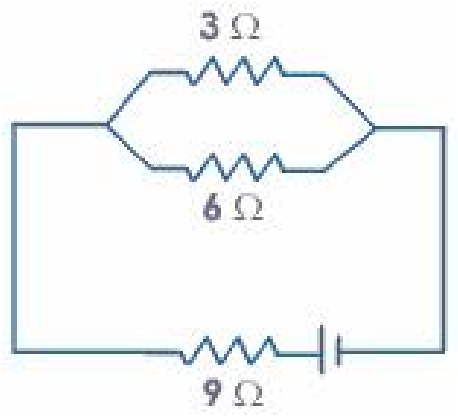


Figura 2

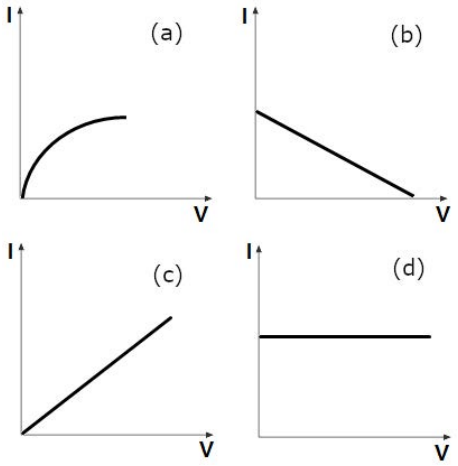


Figura 3

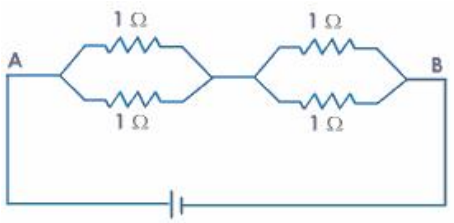


Figura 4

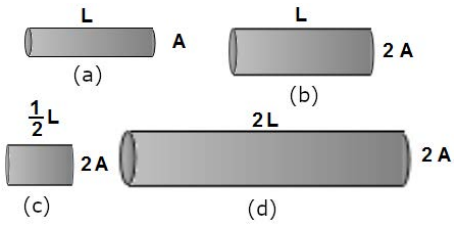


Figura 5

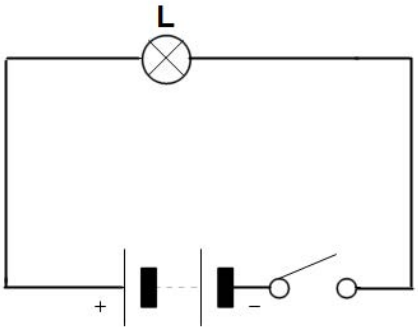


Figura 6

Buon compito ☺

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

Versione 19 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) In Figure 1 at the end of the text, the resistance across AB is:

- [A] 2 Ω.
- [B] 0.5 Ω.
- [C] 4 Ω.
- [D] 1 Ω.

(2) The unit of resistivity is:

- [A] ohm/m^2.
- [B] ohm.
- [C] ohm/m.
- [D] ohm·m.

(3) The unit of electric power is:

- [A] volt.
- [B] joule.
- [C] ampere.
- [D] watt.

(4) 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/P.
- [C] $D^2 \cdot P$.
- [D] $D \cdot P^2$.

(5) 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 parallel.
- [B] all in series.
- [C] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.
- [D] 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.

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

- [A] 6 Ω.
- [B] 3 Ω.
- [C] 1 Ω.
- [D] 2 Ω.

(7) The resistivity of a wire depends on:

- [A] material.
- [B] area of cross-section.
- [C] length.
- [D] length, material and area of cross-section.

(8) 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] $D \cdot F$.
- [B] $D^2 \cdot F$.
- [C] $D \cdot F^2$.
- [D] D^2/F.

(9) 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] $\frac{R_Y}{R_X} = \frac{1}{1}$.
- [B] $\frac{R_Y}{R_X} = \frac{1}{4}$.
- [C] $\frac{R_Y}{R_X} = \frac{2}{1}$.
- [D] $\frac{R_Y}{R_X} = \frac{1}{2}$.

(10) When there is an electric current passing through a wire, the particles moving are:

[A] protons.

[B] electrons.

[C] atoms.

[D] ions.

(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] 400 C.

[B] 600 C.

[C] 200 C.

[D] 500 C.

(12) A battery is used to:

[A] maintain a potential difference.

[B] safeguard against short-circuit.

[C] measure electric potential.

[D] measure electric current.

(13) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 2 at the end of the text.

[A] Upward.

[B] To the left.

[C] Downward.

[D] To the right.

(14) Determine which one of the following statements concerning resistors in parallel 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 voltage across the resistors is the sum of the voltage across each resistor.

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

[A] 100 Ω.

[B] 50 Ω.

[C] 0 Ω.

[D] 25 Ω.

(16) The unit of current is:

[A] ampere.

[B] coulomb.

[C] volt.

[D] watt.

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

[A] 270 Ω.

[B] 810 Ω.

[C] 30 Ω.

[D] 10 Ω.

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

[A] 5 W.

[B] 0.2 W.

[C] 0.5 W.

[D] 2 W.

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

[A] power.

[B] energy.

[C] time.

[D] current.

(20) A positive charge released from rest:

[A] does not move.

[B] moves towards the regions of higher potential.

[C] moves towards the regions of lower potential.

[D] moves towards the regions of equal potential.

(21) Joule/coulomb is same as:

[A] volt.

[B] ampere.

[C] watt.

[D] ohm.

(22) 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] $\frac{R_B}{R_A} = \frac{2}{1}$.

[B] $\frac{R_B}{R_A} = \frac{1}{4}$.

[C] $\frac{R_B}{R_A} = \frac{1}{1}$.

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

(23) 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] $R = \frac{\rho A}{L}$.

[B] $R = \frac{\rho L}{A}$.

[C] $R = \frac{A}{\rho L}$.

[D] $R = \frac{L}{\rho A}$.

(24) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

[A] current.

[B] resistance.

[C] power.

[D] potential difference.

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

[A] potential difference / current = constant.

[B] current = resistance $\times$ potential difference.

[C] current / potential difference = constant.

[D] potential difference = current $\times$ resistance.

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

[A] 6 Ω.

[B] 3 Ω.

[C] 1 Ω.

[D] 2 Ω.

(27) The current in a wire:

[A] depends only on the resistance of the wire.

[B] does not depend on resistance and potential difference.

[C] depends on both resistance and potential difference.

[D] depends only on the potential difference applied.

(28) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

[A] (a).

[B] (c).

[C] (d).

[D] (b).

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

[A] 0 Ω.

[B] 25 Ω.

[C] 50 Ω.

[D] 100 Ω.

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

[A] I^2R/t.

[B] IR^2t.

[C] IRt.

[D] I^2Rt.

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

[A] The total current through the resistors is the sum of the current through each resistor.

[B] The voltage across each resistor is the same.

[C] The current through each resistor is the same.

[D] The power dissipated by each resistor is the same.

(32) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the resistance of the wire.

[A] 0.8 Ω.

[B] 1.7 Ω.

[C] 1 Ω.

[D] 0.4 Ω.

(33) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the power dissipated in the resistor when the applied voltage is 5 V.

[A] 10 W.

[B] 5 W.

[C] 20 W.

[D] 15 W.

(34) In Figure 5 at the end of the text,

[A] 3 Ω , 6 Ω and Ω are in parallel.

[B] 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω.

[C] 3 Ω , 6 Ω are in parallel and 9 Ω is in series.

[D] 6 Ω, 3 Ω and 9 Ω are in series.

(35) All of the wires in Figure 6 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] (d).

[C] (a).

[D] (c).

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

[A] 1 V.

[B] 4 V.

[C] 40 V.

[D] 100 V.

(37) 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] 60 J.

[B] 30 J.

[C] 15 J.

[D] 120 J.

(38) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Voltage.

B Resistance.

C Current.

D Power.

39 Complete the following statement: "The electromotive force is:

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

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

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

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

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

A 4.8×10^{15}.

B 2.2×10^{20}.

C 6.4×10^{18}.

D 36.

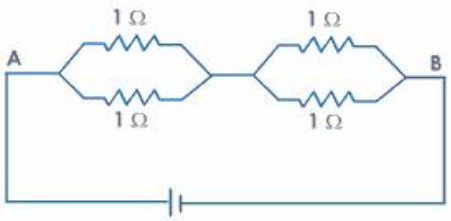


Figura 1

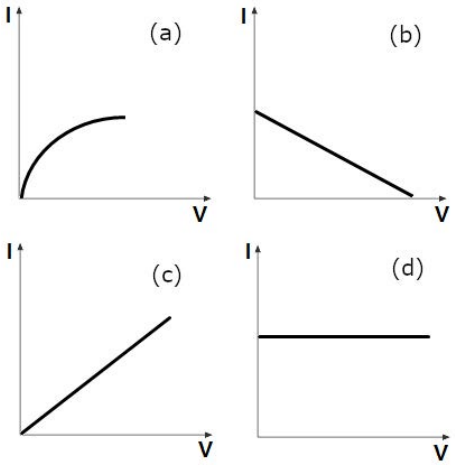


Figura 3

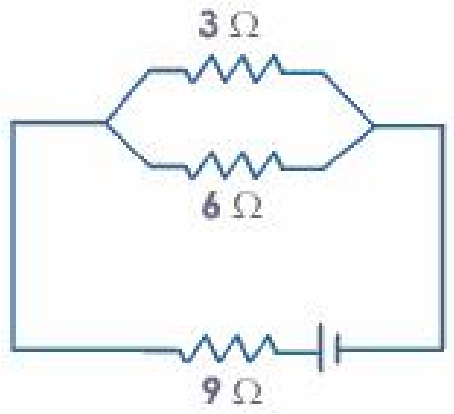


Figura 5

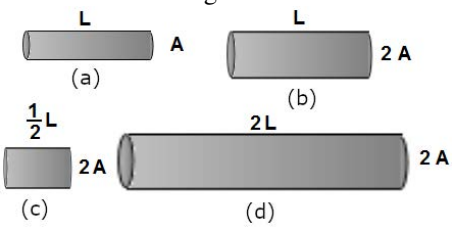


Figura 6

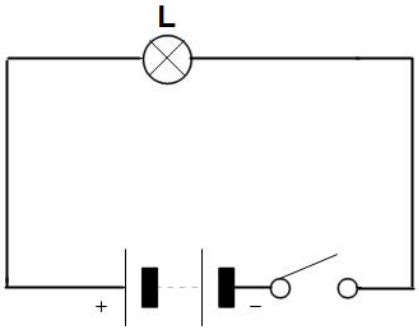


Figura 2

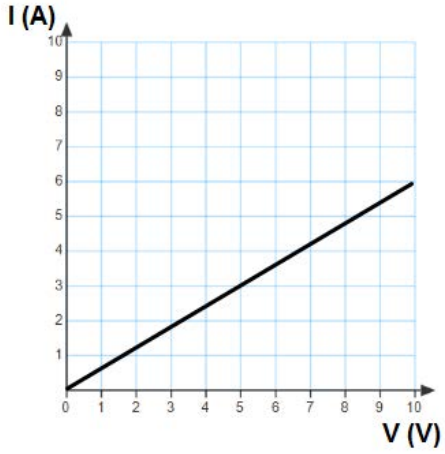


Figura 4

Buon compito ☺

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

Versione 20 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) Two resistances of 100 Ω and zero ohm are connected in series. The overall resistance will be:

A 100 Ω.
B 0 Ω.
C 50 Ω.
D 25 Ω.

(2) 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 left.
B To the right.
C Upward.
D Downward.

(3) All of the wires in Figure 2 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (a).
B (d).
C (c).
D (b).

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

A The voltage across each resistor is the same.
B The power dissipated by each resistor is the same.
C The total voltage across the resistors is the sum of the voltage across each resistor.
D The current through each resistor is the same.

(5) 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 $\frac{R_Y}{R_X} = \frac{1}{2}$.
B $\frac{R_Y}{R_X} = \frac{1}{4}$.
C $\frac{R_Y}{R_X} = \frac{1}{1}$.
D $\frac{R_Y}{R_X} = \frac{2}{1}$.

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

A energy.
B power.
C time.
D current.

(7) The unit of electric power is:

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

(8) 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 $\frac{R_B}{R_A} = \frac{1}{2}$.
B $\frac{R_B}{R_A} = \frac{2}{1}$.
C $\frac{R_B}{R_A} = \frac{1}{1}$.
D $\frac{R_B}{R_A} = \frac{1}{4}$.

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

A 4 V.

B 40 V.

C 100 V.

D 1 V.

(10) A battery is used to:

A measure electric potential.

B measure electric current.

C safeguard against short-circuit.

D maintain a potential difference.

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

A The voltage across each resistor is the same.

B The power dissipated by each resistor is the same.

C The current through each resistor is the same.

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

(12) The current in a wire:

A depends only on the resistance of the wire.

B does not depend on resistance and potential difference.

C depends only on the potential difference applied.

D depends on both resistance and potential difference.

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

A 25 Ω.

B 50 Ω.

C 0 Ω.

D 100 Ω.

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

A 30 Ω.

B 270 Ω.

C 10 Ω.

D 810 Ω.

(15) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

A (b).

B (d).

C (c).

D (a).

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

A 4.8×10^{15}.

B 6.4×10^{18}.

C 2.2×10^{20}.

D 36.

(17) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A power.

B potential difference.

C resistance.

D current.

(18) 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 $R = \dfrac{\rho A}{L}$.

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

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

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

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

A 6 Ω.

B 3 Ω.

C 1 Ω.

D 2 Ω.

(20) In Figure 4 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 3 Ω , 6 Ω and Ω are in parallel.

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

(21) Joule/coulomb is same as:

A ohm.

B volt.

C ampere.

D watt.

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

A 5 W.

B 15 W.

C 20 W.

D 10 W.

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

A IRt.

B I^2Rt.

C IR^2t.

D I^2R/t.

(24) The resistivity of a wire depends on:

A length, material and area of cross-section.

B material.

C area of cross-section.

D length.

(25) 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.

(26) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Voltage.

B Current.

C Resistance.

D Power.

(27) Complete the following statement: "The electromotive force is:

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

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

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

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

(28) 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 500 C.

C 200 C.

D 400 C.

(29) 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^2/P.

B $D \cdot P$.

C $D^2 \cdot P$.

D $D \cdot P^2$.

(30) The electric current as a function of voltage of a wire is presented by the graph in Figure 5. Compute the resistance of the wire.

A 1 Ω.

B 1.7 Ω.

C 0.4 Ω.

D 0.8 Ω.

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

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

B all in series.

C all in parallel.

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

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

A potential difference = current × resistance.

B current = resistance × potential difference.

C potential difference / current = constant.

D current / potential difference = constant.

(33) A positive charge released from rest:

A does not move.

B moves towards the regions of lower potential.

C moves towards the regions of higher potential.

D moves towards the regions of equal potential.

(34) In Figure 6 at the end of the text, the resistance across AB is:

A 2 Ω.

B 0.5 Ω.

C 1 Ω.

D 4 Ω.

(35) The unit of current is:

A volt.

B ampere.

C watt.

D coulomb.

(36) The unit of resistivity is:

A ohm/m.

B ohm/m^2.

C ohm·m.

D ohm.

(37) 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 $D \cdot F$.

B D^2/F.

C $D^2 \cdot F$.

D $D \cdot F^2$.

(38) When there is an electric current passing through a wire, the particles moving are:

A protons.

B atoms.

C electrons.

D ions.

(39) 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 2 Ω.

B 3 Ω.

C 6 Ω.

D 1 Ω.

(40) 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 60 J.

B 120 J.

C 30 J.

D 15 J.

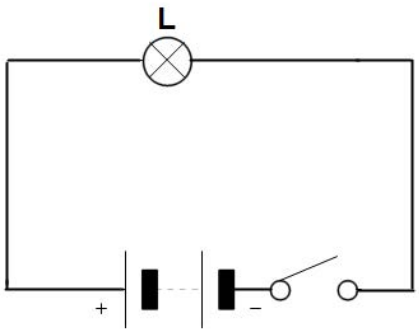


Figura 1

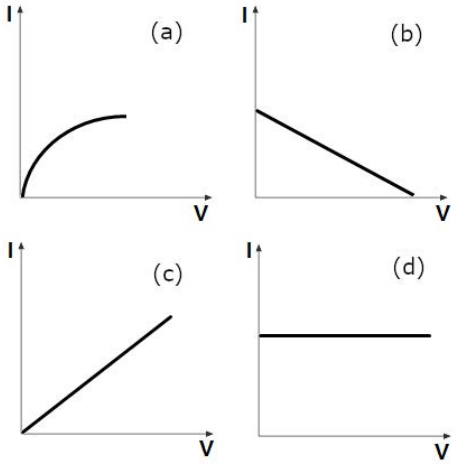


Figura 3

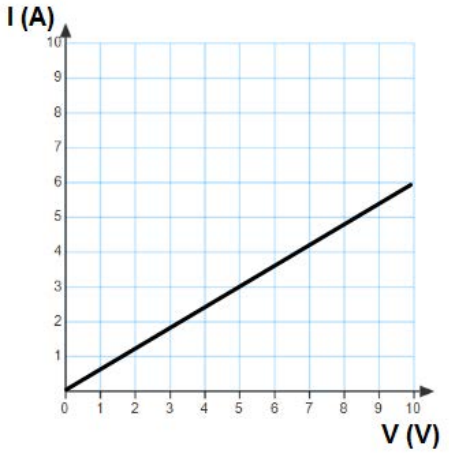


Figura 5

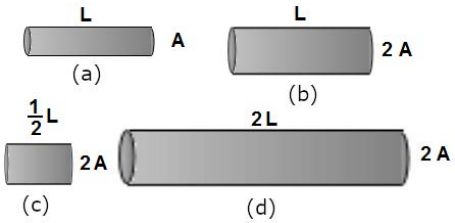


Figura 2

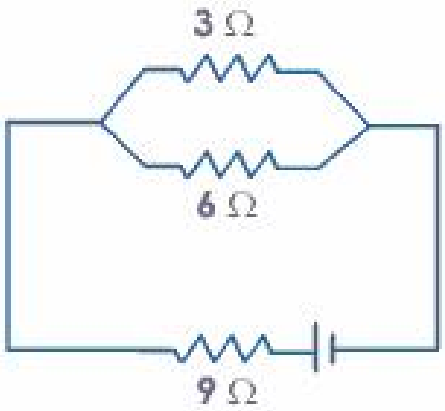


Figura 4

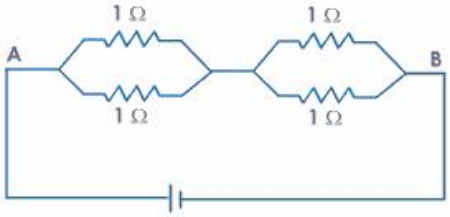


Figura 6

Buon compito ☺

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

Versione 21 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] atoms.
- [B] protons.
- [C] ions.
- [D] electrons.

(2) 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] $\frac{R_B}{R_A} = \frac{1}{2}$.
- [C] $\frac{R_B}{R_A} = \frac{2}{1}$.
- [D] $\frac{R_B}{R_A} = \frac{1}{1}$.

(3) The unit of current is:

- [A] volt.
- [B] watt.
- [C] coulomb.
- [D] ampere.

(4) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

- [A] resistance.
- [B] current.
- [C] potential difference.
- [D] power.

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

- [A] 0 Ω.
- [B] 25 Ω.
- [C] 50 Ω.
- [D] 100 Ω.

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

- [A] 40 V.
- [B] 4 V.
- [C] 100 V.
- [D] 1 V.

(7) 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] 2 Ω.
- [B] 3 Ω.
- [C] 1 Ω.
- [D] 6 Ω.

(8) The current in a wire:

- [A] depends on both resistance and potential difference.
- [B] does not depend on resistance and potential difference.
- [C] depends only on the resistance of the wire.
- [D] depends only on the potential difference applied.

(9) The unit of electric power is:

- [A] ampere.
- [B] watt.
- [C] joule.
- [D] volt.

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

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

B The current through each resistor is the same.

C The power dissipated by each resistor is the same.

D The voltage across each resistor is the same.

(11) 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 Upward.

B To the right.

C To the left.

D Downward.

(12) 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 200 C.

B 400 C.

C 600 C.

D 500 C.

(13) All of the wires in Figure 2 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (c).

B (b).

C (a).

D (d).

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

A 0.2 W.

B 0.5 W.

C 5 W.

D 2 W.

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

A I^2R/t.

B I^2Rt.

C IR^2t.

D IRt.

(16) 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/F.

B $D^2 \cdot F$.

C $D \cdot F^2$.

D $D \cdot F$.

(17) The resistivity of a wire depends on:

A length.

B length, material and area of cross-section.

C material.

D area of cross-section.

(18) Joule/coulomb is same as:

A volt.

B watt.

C ohm.

D ampere.

(19) The unit of resistivity is:

A ohm·m.

B ohm/m.

C ohm/m^2.

D ohm.

(20) 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 6 Ω.

C 1 Ω.

D 3 Ω.

(21) 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 810 Ω.

C 270 Ω.

D 30 Ω.

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

A current = resistance × potential difference.

B potential difference = current × resistance.

C current / potential difference = constant.

D potential difference / current = constant.

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

A current.

B energy.

C power.

D time.

(24) 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 15 J.

B 30 J.

C 120 J.

D 60 J.

(25) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

A (c).

B (b).

C (d).

D (a).

(26) In Figure 4 at the end of the text,

A 3 Ω , 6 Ω and Ω are in parallel.

B 6 Ω, 3 Ω and 9 Ω are in series.

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

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

(27) 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 $D^2 \cdot P$.

B $D \cdot P$.

C $D \cdot P^2$.

D D^2/P.

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

A 4.8×10^{15}.

B 36.

C 2.2×10^{20}.

D 6.4×10^{18}.

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

A 20 W.

B 15 W.

C 5 W.

D 10 W.

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

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

B The current through each resistor is the same.

C The power dissipated by each resistor is the same.

D The voltage across each resistor is the same.

(31) Complete the following statement: "The electromotive force is:

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

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

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

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

(32) 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 $\frac{R_Y}{R_X} = \frac{1}{1}$.

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

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

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

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

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

B all in parallel.

C all in series.

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

(34) A positive charge released from rest:

A does not move.

B moves towards the regions of equal potential.

C moves towards the regions of lower potential.

D moves towards the regions of higher potential.

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

A 25 Ω.

B 0 Ω.

C 100 Ω.

D 50 Ω.

(36) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Voltage.

B Current.

C Power.

D Resistance.

(37) 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 $R = \frac{\rho A}{L}$.

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

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

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

(38) A battery is used to:

A measure electric current.

B maintain a potential difference.

C safeguard against short-circuit.

D measure electric potential.

(39) The electric current as a function of voltage of a wire is presented by the graph in Figure 5. Compute the resistance of the wire.

A 0.8 Ω.

B 1 Ω.

C 1.7 Ω.

D 0.4 Ω.

(40) In Figure 6 at the end of the text, the resistance across *AB* is:

A 1 Ω.

B 0.5 Ω.

C 4 Ω.

D 2 Ω.

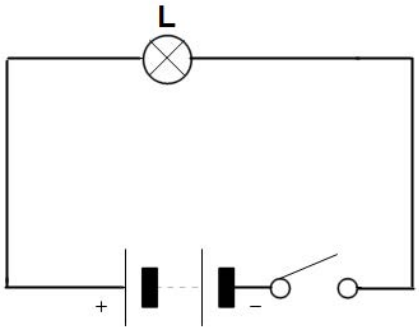


Figura 1

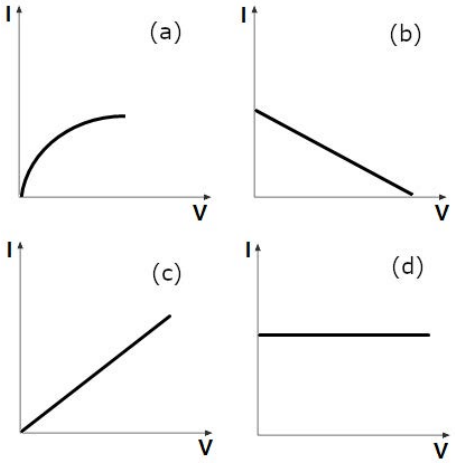


Figura 3

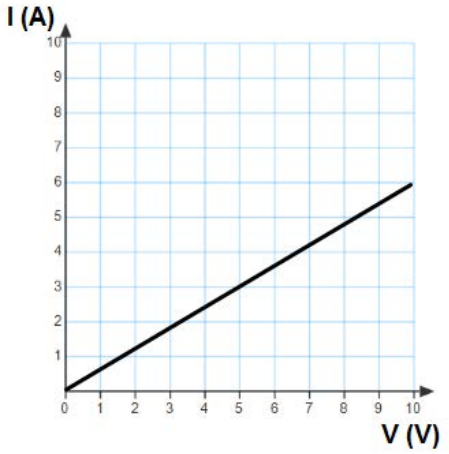


Figura 5

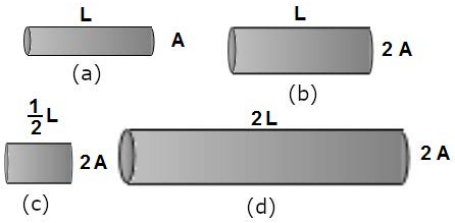


Figura 2

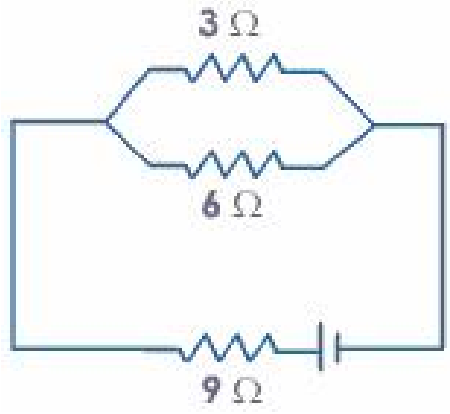


Figura 4

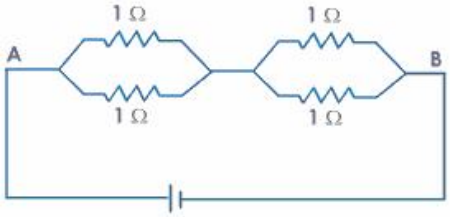


Figura 6

Buon compito ☺

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

Versione 22 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) 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 $3\ \Omega$.
B $2\ \Omega$.
C $6\ \Omega$.
D $1\ \Omega$.

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

A 2 W.
B 5 W.
C 0.5 W.
D 0.2 W.

(3) In Figure 1 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 3 Ω , 6 Ω and Ω are in parallel.
D 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω.

(4) The unit of current is:

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

(5) When there is an electric current passing through a wire, the particles moving are:

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

(6) 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 $\frac{R_Y}{R_X} = \frac{1}{4}$.
B $\frac{R_Y}{R_X} = \frac{1}{1}$.
C $\frac{R_Y}{R_X} = \frac{2}{1}$.
D $\frac{R_Y}{R_X} = \frac{1}{2}$.

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

A The power dissipated by each resistor is the same.
B The current through each resistor is the same.
C The voltage across each resistor is the same.
D The total voltage across the resistors is the sum of the voltage across each resistor.

(8) In Figure 2 at the end of the text, the resistance across AB is:

A $4\ \Omega$.
B $1\ \Omega$.
C $2\ \Omega$.
D $0.5\ \Omega$.

(9) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

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

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

[A] current = resistance × potential difference.

[B] potential difference = current × resistance.

[C] current / potential difference = constant.

[D] potential difference / current = constant.

(11) 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] $D \cdot F^2$.

[B] D^2/F.

[C] $D \cdot F$.

[D] $D^2 \cdot F$.

(12) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 3 at the end of the text.

[A] Upward.

[B] To the left.

[C] To the right.

[D] Downward.

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

[A] current.

[B] power.

[C] time.

[D] energy.

(14) The resistivity of a wire depends on:

[A] material.

[B] length.

[C] length, material and area of cross-section.

[D] area of cross-section.

(15) The current in a wire:

[A] depends on both resistance and potential difference.

[B] depends only on the resistance of the wire.

[C] depends only on the potential difference applied.

[D] does not depend on resistance and potential difference.

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

[A] 6 Ω.

[B] 2 Ω.

[C] 3 Ω.

[D] 1 Ω.

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

[A] I^2R/t.

[B] IR^2t.

[C] I^2Rt.

[D] IRt.

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

[A] The total current through the resistors is the sum of the current through each resistor.

[B] The current through each resistor is the same.

[C] The power dissipated by each resistor is the same.

[D] The voltage across each resistor is the same.

(19) The unit of resistivity is:

[A] ohm/m^2.

[B] ohm·m.

[C] ohm.

[D] ohm/m.

(20) 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] 200 C.

[B] 400 C.

[C] 500 C.

[D] 600 C.

(21) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the power dissipated in the resistor when the applied voltage is 5 V.

[A] 15 W.

[B] 20 W.

[C] 5 W.

[D] 10 W.

(22) 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 parallel.

[B] all in series.

[C] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

[D] 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.

(23) Determine which of the graphs in Figure 5 at the end of the text represents Ohm's law for a solid conductor.

[A] (a).

[B] (c).

[C] (b).

[D] (d).

(24) A positive charge released from rest:

[A] moves towards the regions of higher potential.

[B] moves towards the regions of equal potential.

C does not move.

D moves towards the regions of lower potential.

(25) Joule/coulomb is same as:

A watt.

B ampere.

C ohm.

D volt.

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

A 4.8×10^{15}.

B 2.2×10^{20}.

C 36.

D 6.4×10^{18}.

(27) 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^2/P.

B $D \cdot P^2$.

C $D^2 \cdot P$.

D $D \cdot P$.

(28) A battery is used to:

A measure electric potential.

B safeguard against short-circuit.

C measure electric current.

D maintain a potential difference.

(29) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Power.

B Resistance.

C Current.

D Voltage.

(30) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the resistance of the wire.

A 1 Ω.

B 0.8 Ω.

C 0.4 Ω.

D 1.7 Ω.

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

A 100 V.

B 1 V.

C 40 V.

D 4 V.

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

A 810 Ω.

B 30 Ω.

C 270 Ω.

D 10 Ω.

(33) 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 15 J.

B 30 J.

C 60 J.

D 120 J.

(34) All of the wires in Figure 6 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (d).

B (a).

C (b).

D (c).

(35) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

A 0 Ω.

B 100 Ω.

C 50 Ω.

D 25 Ω.

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

A 0 Ω.

B 25 Ω.

C 100 Ω.

D 50 Ω.

(38) Complete the following statement: “The electromotive force is:

A the force that accelerates electrons through a wire when a battery is connected to it”.

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

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

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

39 The unit of electric power is:

A ampere.

B joule.

C volt.

D watt.

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

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

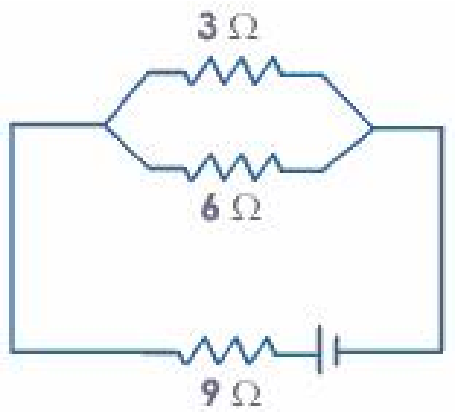


Figura 1

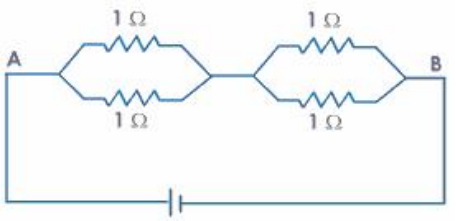


Figura 2

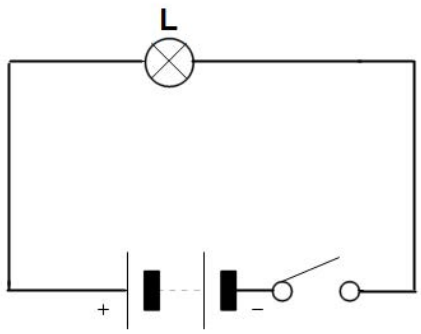


Figura 3

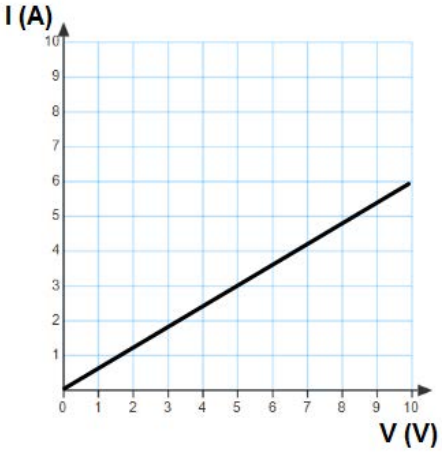


Figura 4

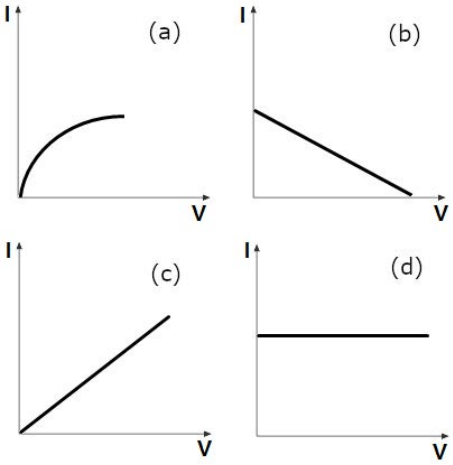


Figura 5

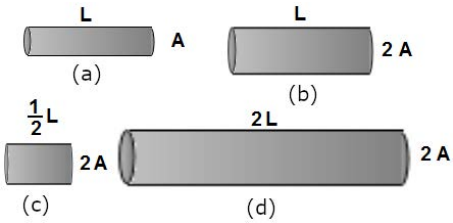


Figura 6

Buon compito ☺

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

Versione 23 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 a current I flows through a resistance R for time t the electrical energy spent is given by:

- [A] I^2Rt.
- [B] IRt.
- [C] I^2R/t.
- [D] IR^2t.

(2) A battery is used to:

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

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

- [A] 40 V.
- [B] 4 V.
- [C] 1 V.
- [D] 100 V.

(4) A positive charge released from rest:

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

(5) 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] 200 C.
- [B] 600 C.
- [C] 400 C.
- [D] 500 C.

(6) Complete the following statement: "The electromotive force is:

- [A] the force that accelerates protons through a wire when a battery is connected to it".
- [B] the maximum electric potential energy stored within a battery".
- [C] the maximum potential difference between the terminals of a battery".
- [D] the force that accelerates electrons through a wire when a battery is connected to it".

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

- [A] resistance.
- [B] power.
- [C] current.
- [D] potential difference.

(8) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

- [A] 0.8 Ω.
- [B] 1.7 Ω.
- [C] 1 Ω.
- [D] 0.4 Ω.

(9) When there is an electric current passing through a wire, the particles moving are:

- [A] ions.
- [B] protons.
- [C] electrons.
- [D] atoms.

(10) 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] 2 Ω.

[B] 1 Ω.

[C] 6 Ω.

[D] 3 Ω.

(11) 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] $\frac{R_B}{R_A} = \frac{2}{1}$.

[C] $\frac{R_B}{R_A} = \frac{1}{1}$.

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

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

[A] 100 Ω.

[B] 25 Ω.

[C] 0 Ω.

[D] 50 Ω.

(13) In Figure 2 at the end of the text, the resistance across AB is:

[A] 0.5 Ω.

[B] 2 Ω.

[C] 4 Ω.

[D] 1 Ω.

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

[A] The power dissipated by each resistor is the same.

[B] The current through each resistor is the same.

[C] The total current through the resistors is the sum of the current through each resistor.

[D] The voltage across each resistor is the same.

(15) 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] 60 J.

[B] 30 J.

[C] 15 J.

[D] 120 J.

(16) The current in a wire:

[A] does not depend on resistance and potential difference.

[B] depends only on the potential difference applied.

[C] depends on both resistance and potential difference.

[D] depends only on the resistance of the wire.

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

[A] 0.5 W.

[B] 0.2 W.

[C] 5 W.

[D] 2 W.

(18) The unit of resistivity is:

[A] ohm/m^2.

[B] ohm·m.

[C] ohm.

[D] ohm/m.

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

[A] potential difference = current × resistance.

[B] potential difference / current = constant.

[C] current = resistance × potential difference.

[D] current / potential difference = constant.

(20) 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] 3 Ω.

[C] 1 Ω.

[D] 6 Ω.

(21) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

[A] (b).

[B] (d).

[C] (a).

[D] (c).

(22) 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^2/P.

[D] $D \cdot P^2$.

(23) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the power dissipated in the resistor when the applied voltage is 5 V.

[A] 5 W.

[B] 10 W.

[C] 20 W.

[D] 15 W.

(24) 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] $\frac{R_Y}{R_X} = \frac{1}{4}$.

[B] $\frac{R_Y}{R_X} = \frac{2}{1}$.

[C] $\frac{R_Y}{R_X} = \frac{1}{1}$.

[D] $\frac{R_Y}{R_X} = \frac{1}{2}$.

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

[A] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

[B] all in parallel.

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

[D] all in series.

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

[A] power.

[B] time.

[C] current.

[D] energy.

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

[A] 810 Ω.

[B] 270 Ω.

[C] 30 Ω.

[D] 10 Ω.

(28) 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] $R = \frac{A}{\rho L}$.

[B] $R = \frac{L}{\rho A}$.

[C] $R = \frac{\rho A}{L}$.

[D] $R = \frac{\rho L}{A}$.

(29) The unit of electric power is:

[A] ampere.

[B] volt.

[C] joule.

[D] watt.

(30) The resistivity of a wire depends on:

[A] material.

[B] length.

[C] area of cross-section.

[D] length, material and area of cross-section.

(31) In Figure 4 at the end of the text,

[A] 3 Ω , 6 Ω and Ω are in parallel.

[B] 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω.

[C] 6 Ω, 3 Ω and 9 Ω are in series.

[D] 3 Ω , 6 Ω are in parallel and 9 Ω is in series.

(32) The unit of current is:

[A] coulomb.

[B] volt.

[C] ampere.

[D] watt.

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

[A] The current through each resistor is the same.

[B] The power dissipated by each resistor is the same.

[C] The total voltage across the resistors is the sum of the voltage across each resistor.

[D] The voltage across each resistor is the same.

(34) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

[A] Current.

[B] Resistance.

[C] Power.

[D] Voltage.

(35) Joule/coulomb is same as:

[A] volt.

[B] watt.

[C] ohm.

[D] ampere.

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

[A] 25 Ω.

[B] 100 Ω.

[C] 50 Ω.

[D] 0 Ω.

(37) 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] 4.8×10^{15}.

[C] 6.4×10^{18}.

[D] 36.

(38) All of the wires in Figure 5 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (d).

B (c).

C (b).

D (a).

(39) 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 $D \cdot F$.

B $D \cdot F^2$.

C D^2/F.

D $D^2 \cdot F$.

(40) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 6 at the end of the text.

A To the left.

B Upward.

C To the right.

D Downward.

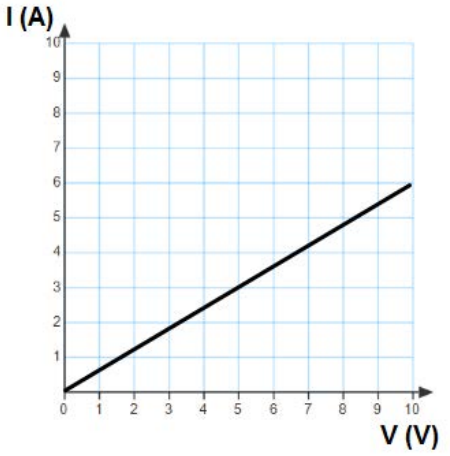


Figura 1

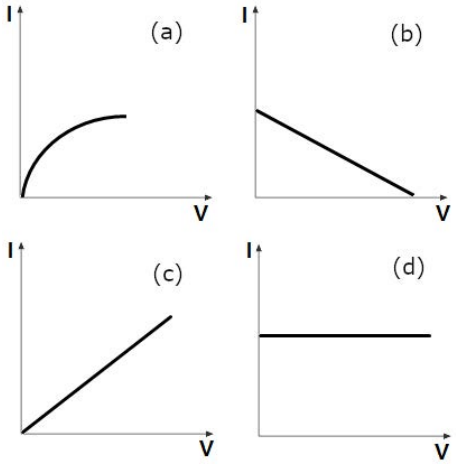


Figura 3

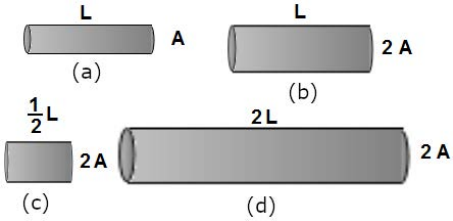


Figura 5

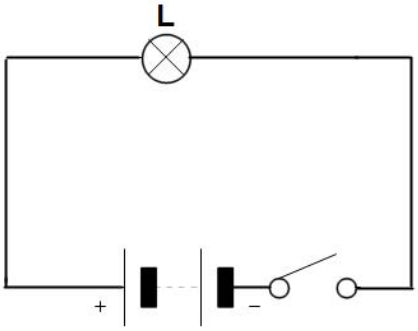


Figura 6

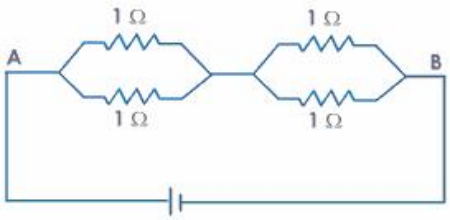


Figura 2

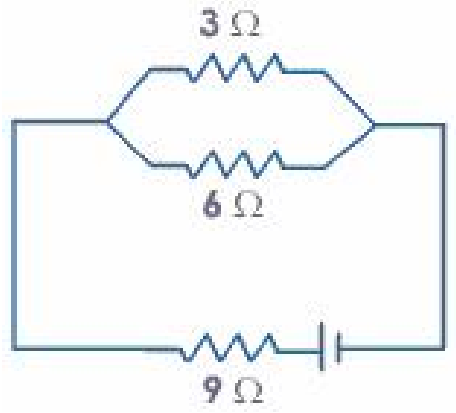


Figura 4

Buon compito ☺

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

Versione 24 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) 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 $R = \dfrac{\rho A}{L}$.

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

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

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

(2) 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 $\dfrac{R_B}{R_A} = \dfrac{1}{4}$.

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

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

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

(3) 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 $\dfrac{R_Y}{R_X} = \dfrac{1}{1}$.

B $\dfrac{R_Y}{R_X} = \dfrac{1}{2}$.

C $\dfrac{R_Y}{R_X} = \dfrac{1}{4}$.

D $\dfrac{R_Y}{R_X} = \dfrac{2}{1}$.

(4) Joule/coulomb is same as:

A volt.

B ohm.

C watt.

D ampere.

(5) When there is an electric current passing through a wire, the particles moving are:

A atoms.

B electrons.

C ions.

D protons.

(6) 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 parallel.

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

C all in series.

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

(7) 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 total current through the resistors is the sum of the current through each resistor.

D The power dissipated by each resistor is the same.

(8) 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^2/P.

B $D^2 \cdot P$.

C $D \cdot P^2$.

D $D \cdot P$.

(9) The current in a wire:

[A] depends only on the resistance of the wire.

[B] depends on both resistance and potential difference.

[C] does not depend on resistance and potential difference.

[D] depends only on the potential difference applied.

(10) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the power dissipated in the resistor when the applied voltage is 5 V.

[A] 10 W.

[B] 20 W.

[C] 5 W.

[D] 15 W.

(11) The unit of resistivity is:

[A] ohm.

[B] ohm/m^2.

[C] ohm/m.

[D] ohm·m.

(12) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

[A] current.

[B] potential difference.

[C] power.

[D] resistance.

(13) 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] $D \cdot F^2$.

[C] D^2/F.

[D] $D \cdot F$.

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

[A] The voltage across each resistor is the same.

[B] The power dissipated by each resistor is the same.

[C] The current through each resistor is the same.

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

(15) A positive charge released from rest:

[A] moves towards the regions of lower potential.

[B] does not move.

[C] moves towards the regions of equal potential.

[D] moves towards the regions of higher potential.

(16) In Figure 2 at the end of the text, the resistance across AB is:

[A] 2 Ω.

[B] 1 Ω.

[C] 4 Ω.

[D] 0.5 Ω.

(17) Complete the following statement: "The electromotive force is:

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

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

[C] the maximum potential difference between the terminals of a battery".

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

(18) 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] 2 Ω.

[D] 3 Ω.

(19) 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] 120 J.

[B] 15 J.

[C] 30 J.

[D] 60 J.

(20) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

[A] Current.

[B] Resistance.

[C] Power.

[D] Voltage.

(21) The resistivity of a wire depends on:

[A] length.

[B] material.

[C] length, material and area of cross-section.

[D] area of cross-section.

(22) 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] 500 C.

[C] 200 C.

[D] 400 C.

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

A 36.

B 2.2×10^{20}.

C 6.4×10^{18}.

D 4.8×10^{15}.

(24) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

A (d).

B (b).

C (a).

D (c).

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

A 3 Ω.

B 2 Ω.

C 1 Ω.

D 6 Ω.

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

A 50 Ω.

B 25 Ω.

C 100 Ω.

D 0 Ω.

(27) 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 (c).

B (a).

C (d).

D (b).

(28) A battery is used to:

A maintain a potential difference.

B measure electric current.

C safeguard against short-circuit.

D measure electric potential.

(29) In Figure 5 at the end of the text,

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

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

C 3 Ω , 6 Ω and Ω are in parallel.

D 6 Ω, 3 Ω and 9 Ω are in series.

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

A 0.5 W.

B 5 W.

C 2 W.

D 0.2 W.

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

A 25 Ω.

B 0 Ω.

C 50 Ω.

D 100 Ω.

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

A energy.

B power.

C time.

D current.

(33) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

A 0.4 Ω.

B 1 Ω.

C 0.8 Ω.

D 1.7 Ω.

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

A 100 V.

B 1 V.

C 40 V.

D 4 V.

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

A I^2R/t.

B IR^2t.

C IRt.

D I^2Rt.

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

A 30 Ω.

B 270 Ω.

C 810 Ω.

D 10 Ω.

(37) The unit of electric power is:

A joule.

B watt.

C volt.

D ampere.

(38) The unit of current is:

A volt.

B watt.

C coulomb.

D ampere.

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

A potential difference / current = constant.

B potential difference = current × resistance.

C current = resistance × potential difference.

D current / potential difference = constant.

(40) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 6 at the end of the text.

A Downward.

B Upward.

C To the left.

D To the right.

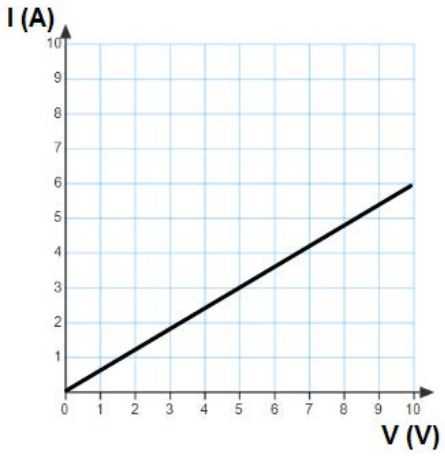


Figura 1

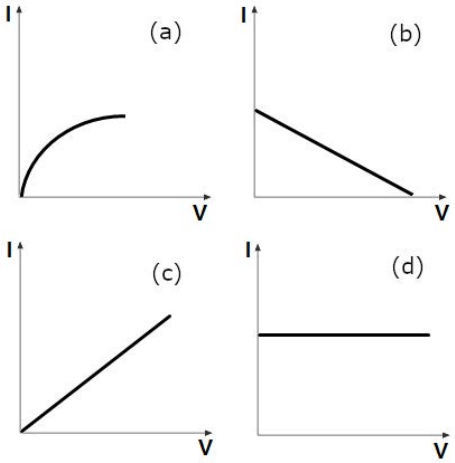


Figura 3

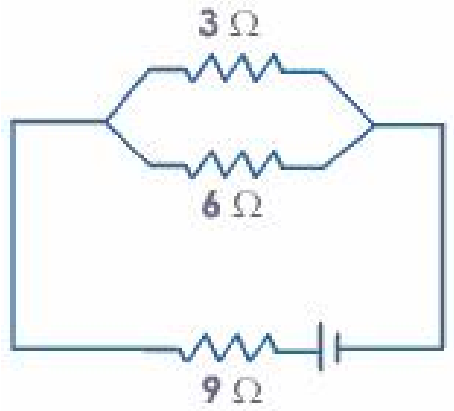


Figura 5

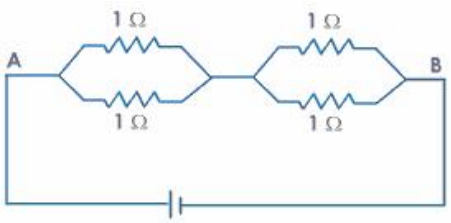


Figura 2

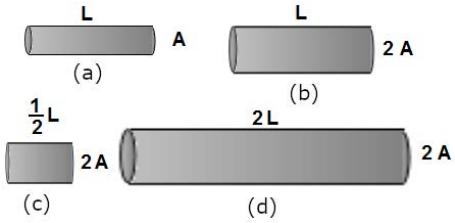


Figura 4

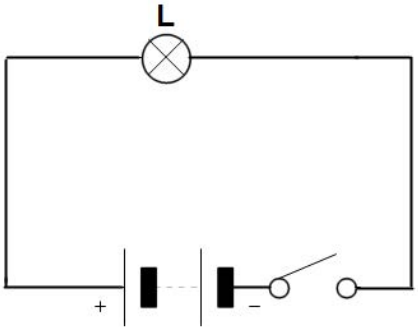


Figura 6

Buon compito ☺

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

Versione 25 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) Compute the number of electrons flowing through a battery that delivers a current of 3.0 A for 12 s.

[A] 36.
[B] 2.2×10^{20}.
[C] 6.4×10^{18}.
[D] 4.8×10^{15}.

(2) 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] 2 Ω.
[C] 1 Ω.
[D] 3 Ω.

(3) When there is an electric current passing through a wire, the particles moving are:

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

(4) The current in a wire:

[A] depends on both resistance and potential difference.
[B] does not depend on resistance and potential difference.
[C] depends only on the potential difference applied.
[D] depends only on the resistance of the wire.

(5) In Figure 1 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.

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

[A] The voltage across each resistor is the same.
[B] The total voltage across the resistors is the sum of the voltage across each resistor.
[C] The power dissipated by each resistor is the same.
[D] The current through each resistor is the same.

(7) 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] $D^2 \cdot P$.
[B] $D \cdot P$.
[C] $D \cdot P^2$.
[D] D^2/P.

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

[A] 0.5 W.
[B] 2 W.
[C] 5 W.
[D] 0.2 W.

(9) A battery is used to:

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

(10) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the power dissipated in the resistor when the applied voltage is 5 V.

[A] 10 W.

B 20 W.

C 5 W.

D 15 W.

(11) 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 $R = \dfrac{\rho A}{L}$.

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

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

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

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

A IR^2t.

B I^2Rt.

C I^2R/t.

D IRt.

(13) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A resistance.

B power.

C potential difference.

D current.

(14) A positive charge released from rest:

A moves towards the regions of lower potential.

B moves towards the regions of higher potential.

C does not move.

D moves towards the regions of equal potential.

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

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

B all in parallel.

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

D all in series.

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

A current / potential difference = constant.

B potential difference = current × resistance.

C potential difference / current = constant.

D current = resistance × potential difference.

(17) 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 maximum electric potential energy stored within a battery".

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

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

A 100 V.

B 1 V.

C 40 V.

D 4 V.

(19) 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 $D \cdot F^2$.

B D^2/F.

C $D^2 \cdot F$.

D $D \cdot F$.

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

A 100 Ω.

B 50 Ω.

C 0 Ω.

D 25 Ω.

(21) All of the wires in Figure 3 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (c).

B (a).

C (b).

D (d).

(22) 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 $\dfrac{R_Y}{R_X} = \dfrac{2}{1}$.

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

C $\dfrac{R_Y}{R_X} = \dfrac{1}{4}$.

D $\dfrac{R_Y}{R_X} = \dfrac{1}{2}$.

(23) The electric current as a function of voltage of a wire is presented by the graph in Figure 2. Compute the resistance of the wire.

A 0.4 Ω.

B 1.7 Ω.

C 1 Ω.

D 0.8 Ω.

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

A 1 Ω.

B 3 Ω.

C 6 Ω.

D 2 Ω.

(25) In Figure 4 at the end of the text, the resistance across AB is:

A 0.5 Ω.

B 4 Ω.

C 2 Ω.

D 1 Ω.

(26) 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 total current through the resistors is the sum of the current through each resistor.

D The power dissipated by each resistor is the same.

(27) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

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

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

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

A 25 Ω.

B 50 Ω.

C 100 Ω.

D 0 Ω.

(29) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Power.

B Voltage.

C Resistance.

D Current.

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

A To the left.

B Downward.

C Upward.

D To the right.

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

A energy.

B time.

C current.

D power.

(32) 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 15 J.

B 120 J.

C 30 J.

D 60 J.

(33) The unit of electric power is:

A ampere.

B watt.

C volt.

D joule.

(34) Determine which of the graphs in Figure 6 at the end of the text represents Ohm's law for a solid conductor.

A (d).

B (a).

C (b).

D (c).

(35) 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 200 C.

B 400 C.

C 600 C.

D 500 C.

(36) The resistivity of a wire depends on:

A material.

B length, material and area of cross-section.

C area of cross-section.

D length.

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

A 30 Ω.

B 270 Ω.

C 10 Ω.

D 810 Ω.

38 The unit of resistivity is:

A ohm/m.

B ohm/m^2.

C ohm.

D ohm·m.

39 The unit of current is:

A ampere.

B coulomb.

C watt.

D volt.

40 Joule/coulomb is same as:

A volt.

B ohm.

C watt.

D ampere.

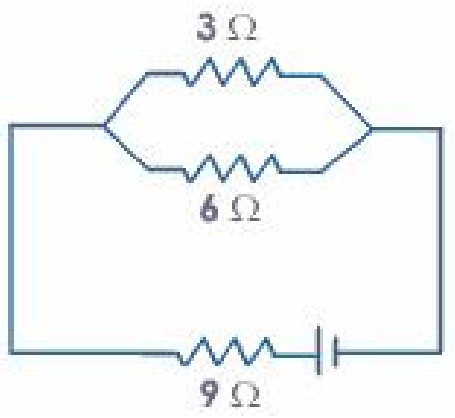


Figura 1

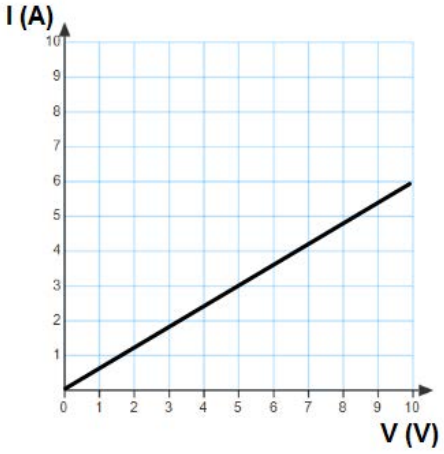


Figura 2

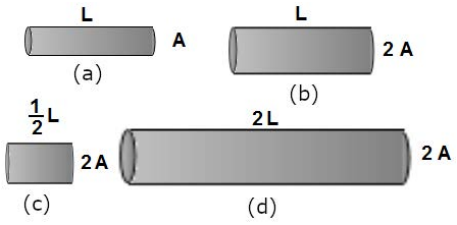
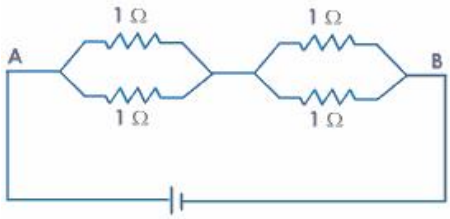


Figura 3



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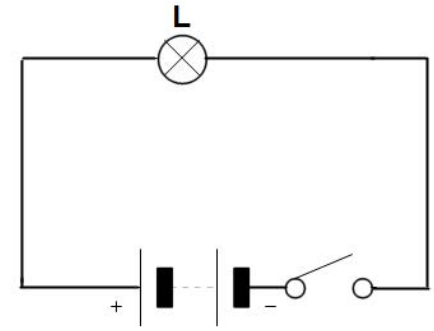


Figura 5

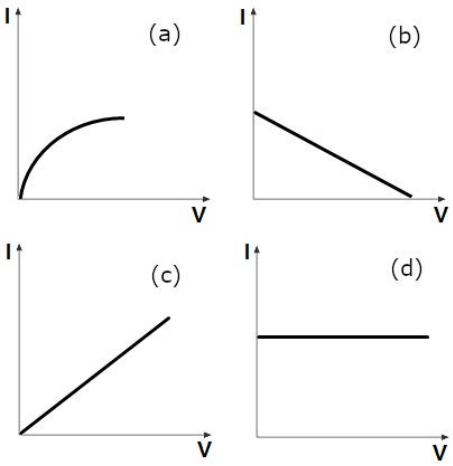


Figura 6

Buon compito ☺

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

Versione 26 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) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

- [A] current.
- [B] power.
- [C] resistance.
- [D] potential difference.

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

- [A] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.
- [B] all in series.
- [C] all in parallel.
- [D] 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.

(3) Determine which of the graphs in Figure 1 at the end of the text represents Ohm's law for a solid conductor.

- [A] (c).
- [B] (b).
- [C] (a).
- [D] (d).

(4) 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^2/F.
- [C] $D \cdot F$.
- [D] $D \cdot F^2$.

(5) 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] 120 J.
- [B] 60 J.
- [C] 15 J.
- [D] 30 J.

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

- [A] The total voltage across the resistors is the sum of the voltage across each resistor.
- [B] The power dissipated by each resistor is the same.
- [C] The voltage across each resistor is the same.
- [D] The current through each resistor is the same.

(7) 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] $\frac{R_B}{R_A} = \frac{1}{1}$.
- [B] $\frac{R_B}{R_A} = \frac{1}{2}$.
- [C] $\frac{R_B}{R_A} = \frac{1}{4}$.
- [D] $\frac{R_B}{R_A} = \frac{2}{1}$.

(8) The unit of electric power is:

- [A] volt.
- [B] joule.
- [C] ampere.
- [D] watt.

(9) 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.

(10) A positive charge released from rest:

A moves towards the regions of lower potential.

B does not move.

C moves towards the regions of higher potential.

D moves towards the regions of equal potential.

(11) The unit of resistivity is:

A ohm/m.

B ohm·m.

C ohm/m^2.

D ohm.

(12) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 2 at the end of the text.

A To the left.

B Upward.

C To the right.

D Downward.

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

A 3 Ω.

B 2 Ω.

C 1 Ω.

D 6 Ω.

(14) All of the wires in Figure 3 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (d).

B (c).

C (a).

D (b).

(15) 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^2/P.

B $D \cdot P$.

C $D^2 \cdot P$.

D $D \cdot P^2$.

(16) In Figure 4 at the end of the text, the resistance across AB is:

A 4 Ω.

B 2 Ω.

C 0.5 Ω.

D 1 Ω.

(17) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Resistance.

B Power.

C Current.

D Voltage.

(18) 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 1 Ω.

B 2 Ω.

C 3 Ω.

D 6 Ω.

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

A 25 Ω.

B 0 Ω.

C 100 Ω.

D 50 Ω.

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

A IRt.

B IR^2t.

C I^2Rt.

D I^2R/t.

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

A 25 Ω.

B 0 Ω.

C 100 Ω.

D 50 Ω.

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

A 0.5 W.

B 0.2 W.

C 5 W.

D 2 W.

(23) The unit of current is:

A watt.

B coulomb.

C volt.

D ampere.

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

A The power dissipated by each resistor is the same.

B The current through each resistor is the same.

C The voltage across each resistor is the same.

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

(25) 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 400 C.

B 600 C.

C 200 C.

D 500 C.

(26) 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 $R = \dfrac{\rho A}{L}$.

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

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

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

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

A current.

B energy.

C power.

D time.

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

A 100 V.

B 4 V.

C 1 V.

D 40 V.

(29) The electric current as a function of voltage of a wire is presented by the graph in Figure 5. Compute the resistance of the wire.

A 0.8 Ω.

B 1 Ω.

C 1.7 Ω.

D 0.4 Ω.

(30) A battery is used to:

A measure electric potential.

B safeguard against short-circuit.

C measure electric current.

D maintain a potential difference.

(31) In Figure 6 at the end of the text,

A 6 Ω, 3 Ω and 9 Ω are in series.

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

C 3 Ω , 6 Ω and Ω are in parallel.

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

(32) Joule/coulomb is same as:

A ohm.

B watt.

C ampere.

D volt.

(33) 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 6.4×10^{18}.

D 4.8×10^{15}.

(34) 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 $\dfrac{R_Y}{R_X} = \dfrac{1}{1}$.

B $\dfrac{R_Y}{R_X} = \dfrac{1}{2}$.

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

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

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

A current / potential difference = constant.

B potential difference = current × resistance.

C potential difference / current = constant.

D current = resistance × potential difference.

(36) When there is an electric current passing through a wire, the particles moving are:

A ions.

B protons.

C electrons.

D atoms.

(37) The resistivity of a wire depends on:

A length, material and area of cross-section.

B material.

C length.

D area of cross-section.

(38) Complete the following statement: "The electromotive force is:

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

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

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

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

39 The current in a wire:

A depends on both resistance and potential difference.

B does not depend on resistance and potential difference.

C depends only on the resistance of the wire.

D depends only on the potential difference applied.

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

A 20 W.

B 10 W.

C 15 W.

D 5 W.

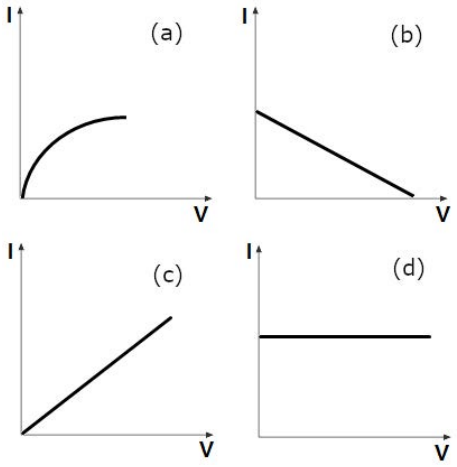


Figura 1

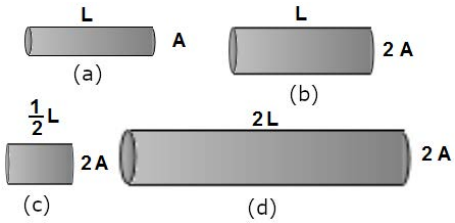


Figura 3

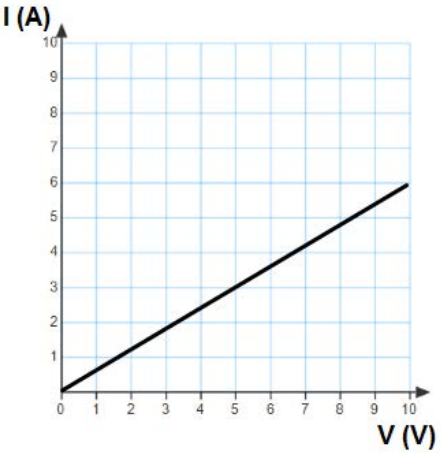


Figura 5

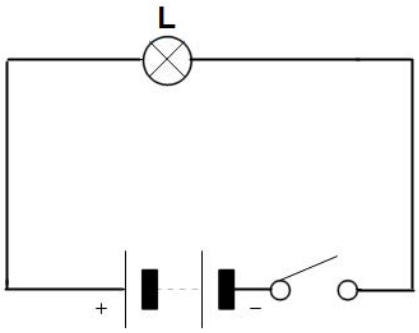


Figura 2

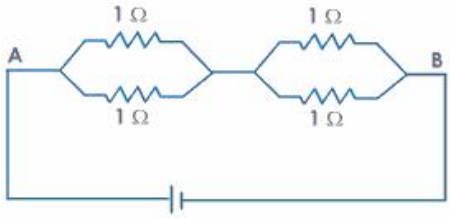


Figura 4

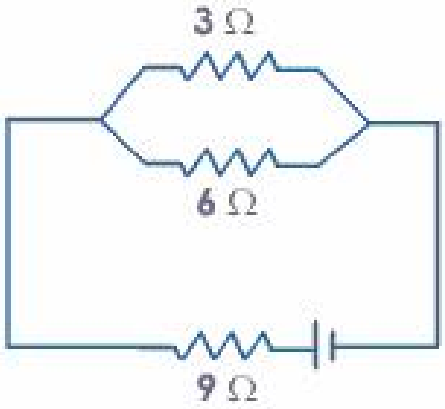


Figura 6

Buon compito ☺

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

Versione 27 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) Two resistances of 100 Ω and zero ohm are connected in series. The overall resistance will be:

- [A] 0 Ω.
- [B] 50 Ω.
- [C] 100 Ω.
- [D] 25 Ω.

(2) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

- [A] Power.
- [B] Current.
- [C] Voltage.
- [D] Resistance.

(3) 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] $D \cdot F$.
- [B] $D \cdot F^2$.
- [C] $D^2 \cdot F$.
- [D] D^2/F.

(4) 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] $\frac{R_B}{R_A} = \frac{1}{2}$.
- [B] $\frac{R_B}{R_A} = \frac{1}{4}$.
- [C] $\frac{R_B}{R_A} = \frac{2}{1}$.
- [D] $\frac{R_B}{R_A} = \frac{1}{1}$.

(5) A positive charge released from rest:

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

(6) The current in a wire:

- [A] does not depend on resistance and potential difference.
- [B] depends only on the potential difference applied.
- [C] depends on both resistance and potential difference.
- [D] depends only on the resistance of the wire.

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

- [A] The total current through the resistors is the sum of the current through each resistor.
- [B] The power dissipated by each resistor is the same.
- [C] The current through each resistor is the same.
- [D] The voltage across each resistor is the same.

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

- [A] 6 Ω.
- [B] 2 Ω.
- [C] 3 Ω.
- [D] 1 Ω.

(9) All of the wires in Figure 1 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] (d).
- [C] (c).
- [D] (a).

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

[A] 25 Ω.

[B] 50 Ω.

[C] 0 Ω.

[D] 100 Ω.

(11) 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] $R = \dfrac{\rho A}{L}$.

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

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

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

(12) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 2 at the end of the text.

[A] Downward.

[B] Upward.

[C] To the right.

[D] To the left.

(13) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

[A] power.

[B] potential difference.

[C] current.

[D] resistance.

(14) Complete the following statement: "The electromotive force is:

[A] the maximum electric potential energy stored within a battery".

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

[C] the maximum potential difference between the terminals of a battery".

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

(15) 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] 200 C.

[B] 600 C.

[C] 500 C.

[D] 400 C.

(16) 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] 1 Ω.

[B] 3 Ω.

[C] 6 Ω.

[D] 2 Ω.

(17) A battery is used to:

[A] maintain a potential difference.

[B] measure electric potential.

[C] measure electric current.

[D] safeguard against short-circuit.

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

[A] 2 W.

[B] 0.2 W.

[C] 5 W.

[D] 0.5 W.

(19) The resistivity of a wire depends on:

[A] area of cross-section.

[B] length, material and area of cross-section.

[C] length.

[D] material.

(20) 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] $\dfrac{R_Y}{R_X} = \dfrac{1}{1}$.

[B] $\dfrac{R_Y}{R_X} = \dfrac{1}{4}$.

[C] $\dfrac{R_Y}{R_X} = \dfrac{2}{1}$.

[D] $\dfrac{R_Y}{R_X} = \dfrac{1}{2}$.

(21) 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.

(22) The unit of resistivity is:

[A] ohm/m.

[B] ohm.

[C] ohm/m^2.

[D] ohm·m.

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

A IRt.

B IR^2t.

C I^2Rt.

D I^2R/t.

(24) The unit of electric power is:

A volt.

B ampere.

C watt.

D joule.

(25) 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 810 Ω.

C 270 Ω.

D 30 Ω.

(26) The unit of current is:

A volt.

B coulomb.

C watt.

D ampere.

(27) In Figure 3 at the end of the text,

A 6 Ω, 3 Ω and 9 Ω are in series.

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

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

D 3 Ω , 6 Ω and Ω are in parallel.

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

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

B all in parallel.

C all in series.

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

(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 15 J.

B 120 J.

C 30 J.

D 60 J.

(30) When there is an electric current passing through a wire, the particles moving are:

A atoms.

B ions.

C protons.

D electrons.

(31) Joule/coulomb is same as:

A ampere.

B volt.

C watt.

D ohm.

(32) In Figure 4 at the end of the text, the resistance across AB is:

A 4 Ω.

B 0.5 Ω.

C 1 Ω.

D 2 Ω.

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

A potential difference = current × resistance.

B potential difference / current = constant.

C current = resistance × potential difference.

D current / potential difference = constant.

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

A 10 W.

B 20 W.

C 5 W.

D 15 W.

(35) Determine which of the graphs in Figure 6 at the end of the text represents Ohm's law for a solid conductor.

A (a).

B (d).

C (c).

D (b).

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

A 100 V.

B 4 V.

C 40 V.

D 1 V.

(37) 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 4.8×10^{15}.

C 36.

D 6.4×10^{18}.

(38) The electric current as a function of voltage of a wire is presented by the graph in Figure 5. Compute the resistance of the wire.

A 1.7 Ω.

B 0.8 Ω.

C 0.4 Ω.

D 1 Ω.

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

A time.

B current.

C power.

D energy.

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

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

B The power dissipated by each resistor is the same.

C The current through each resistor is the same.

D The voltage across each resistor is the same.

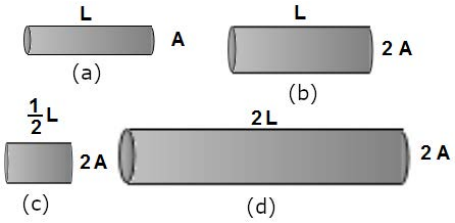


Figura 1

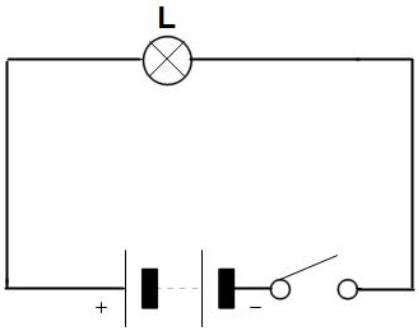


Figura 2

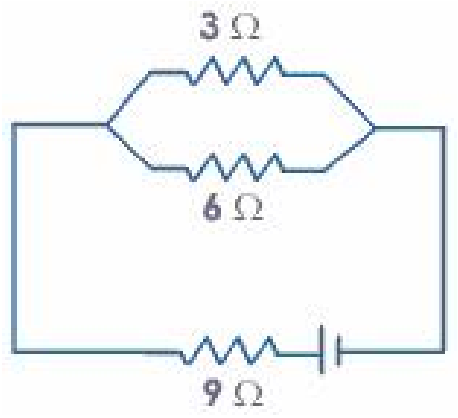
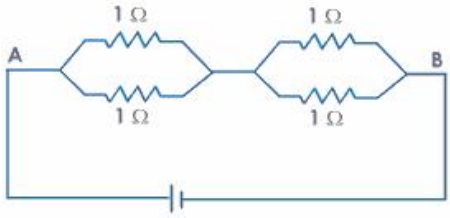


Figura 3



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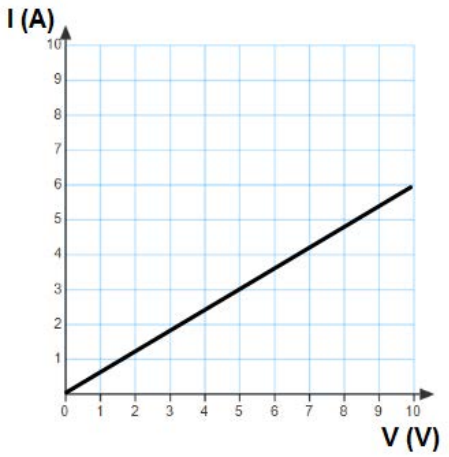


Figura 5

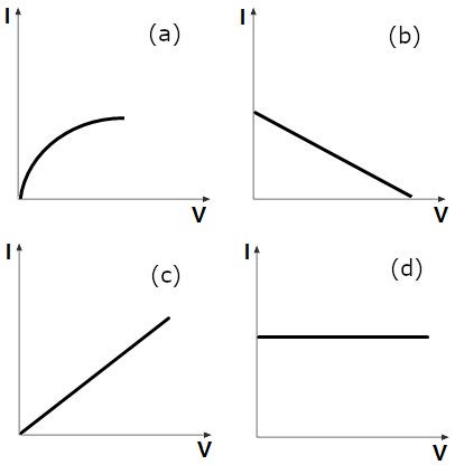


Figura 6

Buon compito ☺

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

Versione 28 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) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the power dissipated in the resistor when the applied voltage is 5 V.

[A] 10 W.
[B] 20 W.
[C] 15 W.
[D] 5 W.

(2) 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] $R = \dfrac{L}{\rho A}$.
[C] $R = \dfrac{A}{\rho L}$.
[D] $R = \dfrac{\rho A}{L}$.

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

[A] 0 Ω.
[B] 25 Ω.
[C] 100 Ω.
[D] 50 Ω.

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

[A] The total current through the resistors is the sum of the current through each resistor.
[B] The voltage across each resistor is the same.
[C] The current through each resistor is the same.
[D] The power dissipated by each resistor is the same.

(5) Joule/coulomb is same as:

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

(6) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 2 at the end of the text.

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

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

[A] current = resistance × potential difference.
[B] current / potential difference = constant.
[C] potential difference = current × resistance.
[D] potential difference / current = constant.

(8) A battery is used to:

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

(9) When there is an electric current passing through a wire, the particles moving are:

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

(10) Determine which of the graphs in Figure 3 at the end of the text represents Ohm's law for a solid conductor.

[A] (c).

[B] (d).

[C] (a).

[D] (b).

(11) The resistivity of a wire depends on:

[A] material.

[B] length.

[C] area of cross-section.

[D] length, material and area of cross-section.

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

[A] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

[B] all in series.

[C] all in parallel.

[D] 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.

(13) 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] $\frac{R_Y}{R_X} = \frac{1}{4}$.

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

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

[D] $\frac{R_Y}{R_X} = \frac{1}{2}$.

(14) 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] 3 Ω.

[B] 1 Ω.

[C] 6 Ω.

[D] 2 Ω.

(15) A positive charge released from rest:

[A] does not move.

[B] moves towards the regions of equal potential.

[C] moves towards the regions of higher potential.

[D] moves towards the regions of lower potential.

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

[A] 100 Ω.

[B] 50 Ω.

[C] 25 Ω.

[D] 0 Ω.

(17) The unit of resistivity is:

[A] ohm/m^2.

[B] ohm·m.

[C] ohm/m.

[D] ohm.

(18) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

[A] 1.7 Ω.

[B] 1 Ω.

[C] 0.8 Ω.

[D] 0.4 Ω.

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

[A] 810 Ω.

[B] 30 Ω.

[C] 270 Ω.

[D] 10 Ω.

(20) 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] $\frac{R_B}{R_A} = \frac{2}{1}$.

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

[D] $\frac{R_B}{R_A} = \frac{1}{1}$.

(21) The current in a wire:

[A] depends only on the resistance of the wire.

[B] depends only on the potential difference applied.

[C] does not depend on resistance and potential difference.

[D] depends on both resistance and potential difference.

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

[A] The total voltage across the resistors is the sum of the voltage across each resistor.

[B] The power dissipated by each resistor is the same.

[C] The voltage across each resistor is the same.

[D] The current through each resistor is the same.

(23) 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.

(24) 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.

(25) The unit of electric power is:

A volt.

B ampere.

C watt.

D joule.

(26) In Figure 4 at the end of the text, the resistance across AB is:

A 0.5 Ω.

B 1 Ω.

C 2 Ω.

D 4 Ω.

(27) 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 $D \cdot P^2$.

B D^2/P.

C $D \cdot P$.

D $D^2 \cdot P$.

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

A 100 V.

B 1 V.

C 40 V.

D 4 V.

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

A IRt.

B IR^2t.

C I^2R/t.

D I^2Rt.

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

A time.

B power.

C current.

D energy.

(31) In Figure 5 at the end of the text,

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

B 3 Ω , 6 Ω and Ω are in parallel.

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

D 6 Ω, 3 Ω and 9 Ω are in series.

(32) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A power.

B current.

C potential difference.

D resistance.

(33) 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 60 J.

B 15 J.

C 30 J.

D 120 J.

(34) All of the wires in Figure 6 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (a).

B (d).

C (c).

D (b).

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

A 0.2 W.

B 5 W.

C 2 W.

D 0.5 W.

(36) The unit of current is:

A watt.

B coulomb.

C ampere.

D volt.

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

A 36.

B 2.2×10^{20}.

C 4.8×10^{15}.

D 6.4×10^{18}.

(38) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Voltage.

B Power.

C Resistance.

D Current.

39 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 $D \cdot F^2$.

B $D \cdot F$.

C D^2/F.

D $D^2 \cdot F$.

40 Complete the following statement: "The electromotive force is:

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

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

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

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

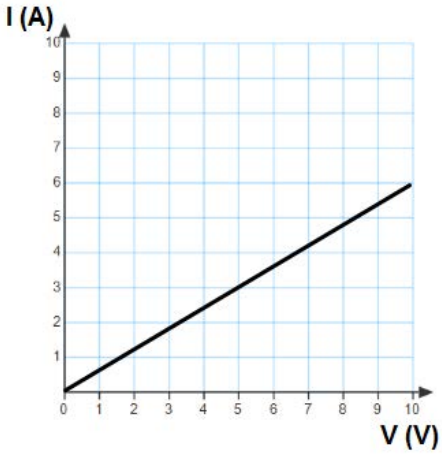


Figura 1

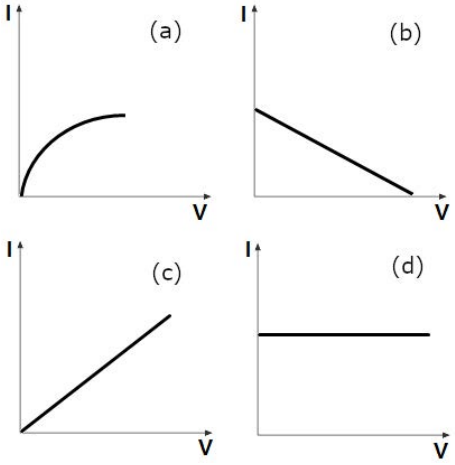


Figura 3

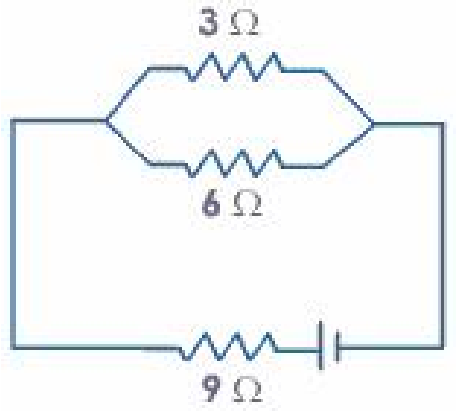


Figura 5

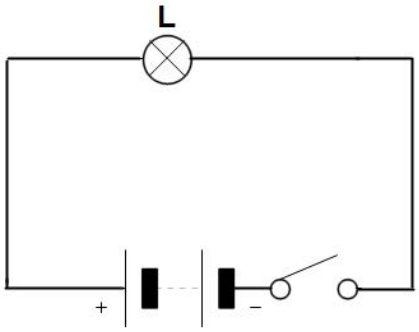


Figura 2

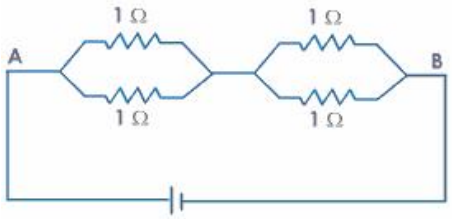


Figura 4

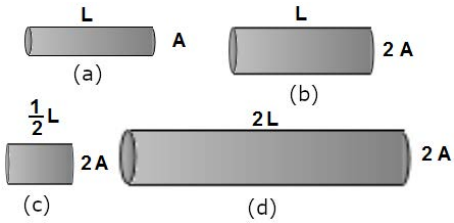


Figura 6

Buon compito ☺

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

Versione 29 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) Three resistors 2 Ω , 3 Ω and 4 Ω are connected so that the equivalent resistance is 9 Ω. The resistors are connected:

- [A] 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.
- [B] all in series.
- [C] all in parallel.
- [D] 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω.

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

- [A] 25 Ω.
- [B] 0 Ω.
- [C] 50 Ω.
- [D] 100 Ω.

(3) 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] 15 J.
- [B] 120 J.
- [C] 30 J.
- [D] 60 J.

(4) 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] $R = \frac{\rho L}{A}$.
- [B] $R = \frac{A}{\rho L}$.
- [C] $R = \frac{\rho A}{L}$.
- [D] $R = \frac{L}{\rho A}$.

(5) 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] 1 Ω.
- [B] 6 Ω.
- [C] 2 Ω.
- [D] 3 Ω.

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

- [A] 4.8×10^{15}.
- [B] 2.2×10^{20}.
- [C] 36.
- [D] 6.4×10^{18}.

(7) In Figure 1 at the end of the text,

- [A] 3 Ω , 6 Ω and Ω are in parallel.
- [B] 9 Ω and 6 Ω are in parallel and the combination is in series with 3 Ω.
- [C] 3 Ω , 6 Ω are in parallel and 9 Ω is in series.
- [D] 6 Ω, 3 Ω and 9 Ω are in series.

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

- [A] (d).
- [B] (a).
- [C] (b).
- [D] (c).

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

- [A] power.
- [B] energy.
- [C] time.
- [D] current.

(10) 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] $D^2 \cdot P$.

[B] $D \cdot P$.

[C] D^2/P.

[D] $D \cdot P^2$.

(11) A battery is used to:

[A] safeguard against short-circuit.

[B] maintain a potential difference.

[C] measure electric potential.

[D] measure electric current.

(12) The unit of current is:

[A] volt.

[B] watt.

[C] ampere.

[D] coulomb.

(13) Joule/coulomb is same as:

[A] watt.

[B] ampere.

[C] volt.

[D] ohm.

(14) When there is an electric current passing through a wire, the particles moving are:

[A] electrons.

[B] atoms.

[C] protons.

[D] ions.

(15) All of the wires in Figure 3 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

[A] (c).

[B] (a).

[C] (b).

[D] (d).

(16) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 4 at the end of the text.

[A] To the right.

[B] Downward.

[C] To the left.

[D] Upward.

(17) The resistivity of a wire depends on:

[A] material.

[B] length.

[C] length, material and area of cross-section.

[D] area of cross-section.

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

[A] 5 W.

[B] 2 W.

[C] 0.2 W.

[D] 0.5 W.

(19) In Figure 5 at the end of the text, the resistance across AB is:

[A] 0.5 Ω.

[B] 1 Ω.

[C] 4 Ω.

[D] 2 Ω.

(20) 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] 400 C.

[C] 500 C.

[D] 200 C.

(21) The electric current as a function of voltage of a wire is presented by the graph in Figure 6. Compute the power dissipated in the resistor when the applied voltage is 5 V.

[A] 20 W.

[B] 15 W.

[C] 10 W.

[D] 5 W.

(22) The unit of electric power is:

[A] volt.

[B] ampere.

[C] joule.

[D] watt.

(23) The current in a wire:

[A] depends on both resistance and potential difference.

[B] does not depend on resistance and potential difference.

[C] depends only on the resistance of the wire.

[D] depends only on the potential difference applied.

(24) The electric current as a function of voltage of a wire is presented by the graph in Figure 6. Compute the resistance of the wire.

[A] 1 Ω.

[B] 0.8 Ω.

[C] 1.7 Ω.

D 0.4 Ω.

(25) 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 $\frac{R_Y}{R_X} = \frac{1}{4}$.

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

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

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

(26) The unit of resistivity is:

A ohm/m.

B ohm·m.

C ohm/m^2.

D ohm.

(27) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Resistance.

B Voltage.

C Power.

D Current.

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

A 100 V.

B 1 V.

C 4 V.

D 40 V.

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

A IRt.

B IR^2t.

C I^2R/t.

D I^2Rt.

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

A current / potential difference = constant.

B potential difference = current × resistance.

C current = resistance × potential difference.

D potential difference / current = constant.

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

A 1 Ω.

B 2 Ω.

C 6 Ω.

D 3 Ω.

(32) A positive charge released from rest:

A moves towards the regions of higher potential.

B does not move.

C moves towards the regions of lower potential.

D moves towards the regions of equal potential.

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

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

B The power dissipated by each resistor is the same.

C The current through each resistor is the same.

D The voltage across each resistor is the same.

(34) Complete the following statement: "The electromotive force is:

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

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

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

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

(35) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A resistance.

B potential difference.

C current.

D power.

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

A The current through each resistor is the same.

B The power dissipated by each resistor is the same.

C The voltage across each resistor is the same.

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

(37) 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^2/F.

D $D \cdot F^2$.

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

A 25 Ω.

B 50 Ω.

C 0 Ω.

D 100 Ω.

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

A 270 Ω.

B 10 Ω.

C 810 Ω.

D 30 Ω.

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

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

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

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

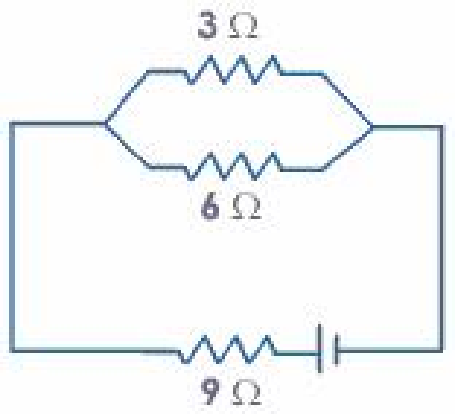


Figura 1

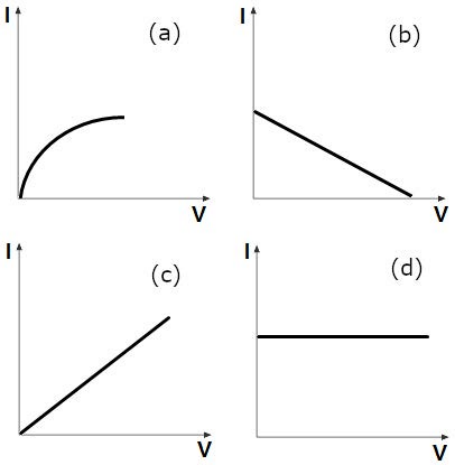


Figura 2

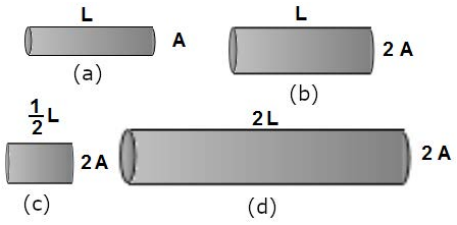
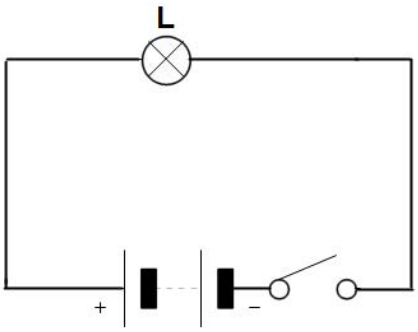


Figura 3



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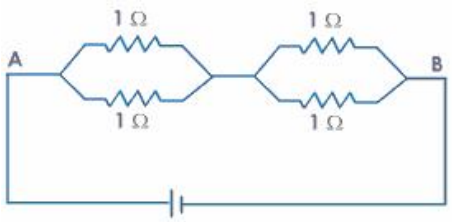

Figura 5

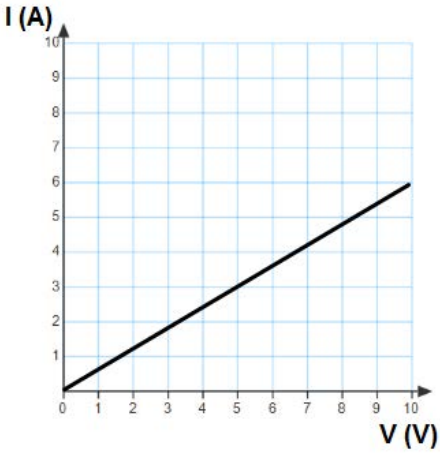

Figura 6

Buon compito ☺

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

Versione 30 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) Ohm's law relates potential difference with:

- [A] current.
- [B] energy.
- [C] power.
- [D] time.

(2) 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] $\frac{R_B}{R_A} = \frac{2}{1}$.
- [B] $\frac{R_B}{R_A} = \frac{1}{1}$.
- [C] $\frac{R_B}{R_A} = \frac{1}{4}$.
- [D] $\frac{R_B}{R_A} = \frac{1}{2}$.

(3) 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] $D \cdot F$.
- [B] $D \cdot F^2$.
- [C] $D^2 \cdot F$.
- [D] D^2/F.

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

- [A] 40 V.
- [B] 4 V.
- [C] 100 V.
- [D] 1 V.

(5) 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] 2 Ω.
- [B] 3 Ω.
- [C] 6 Ω.
- [D] 1 Ω.

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

- [A] 0.5 W.
- [B] 5 W.
- [C] 2 W.
- [D] 0.2 W.

(7) 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] 15 J.
- [B] 30 J.
- [C] 60 J.
- [D] 120 J.

(8) 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] $D^2 \cdot P$.
- [B] $D \cdot P^2$.
- [C] $D \cdot P$.
- [D] D^2/P.

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

- [A] current = resistance × potential difference.
- [B] current / potential difference = constant.
- [C] potential difference = current × resistance.

D potential difference / current = constant.

(10) The resistivity of a wire depends on:

A length.

B length, material and area of cross-section.

C area of cross-section.

D material.

(11) When there is an electric current passing through a wire, the particles moving are:

A atoms.

B protons.

C ions.

D electrons.

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

A 30 Ω.

B 810 Ω.

C 270 Ω.

D 10 Ω.

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

A 50 Ω.

B 25 Ω.

C 0 Ω.

D 100 Ω.

(14) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 10 W.

B 20 W.

C 15 W.

D 5 W.

(15) A positive charge released from rest:

A does not move.

B moves towards the regions of equal potential.

C moves towards the regions of lower potential.

D moves towards the regions of higher potential.

(16) The unit of current is:

A ampere.

B watt.

C coulomb.

D volt.

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

A The voltage across each resistor is the same.

B The power dissipated by each resistor is the same.

C The current through each resistor is the same.

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

(18) In Figure 2 at the end of the text,

A 6 Ω, 3 Ω and 9 Ω are in series.

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

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

D 3 Ω , 6 Ω and Ω are in parallel.

(19) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 3 at the end of the text.

A Downward.

B Upward.

C To the right.

D To the left.

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

A 0 Ω.

B 50 Ω.

C 100 Ω.

D 25 Ω.

(21) A battery is used to:

A safeguard against short-circuit.

B measure electric potential.

C maintain a potential difference.

D measure electric current.

(22) 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 power.

D resistance.

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

A IRt.

B IR^2t.

C I^2Rt.

D I^2R/t.

(24) 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 $\frac{R_Y}{R_X} = \frac{1}{4}$.

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

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

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

(25) The current in a wire:

A does not depend on resistance and potential difference.

B depends only on the potential difference applied.

C depends on both resistance and potential difference.

D depends only on the resistance of the wire.

(26) Determine which of the graphs in Figure 4 at the end of the text represents Ohm's law for a solid conductor.

A (c).

B (d).

C (b).

D (a).

(27) 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 400 C.

B 600 C.

C 200 C.

D 500 C.

(28) 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 4.8×10^{15}.

C 6.4×10^{18}.

D 36.

(29) Joule/coulomb is same as:

A volt.

B watt.

C ampere.

D ohm.

(30) All of the wires in Figure 5 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (d).

B (c).

C (b).

D (a).

(31) The unit of electric power is:

A joule.

B watt.

C ampere.

D volt.

(32) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

A Resistance.

B Voltage.

C Power.

D Current.

(33) The unit of resistivity is:

A ohm/m.

B ohm/m^2.

C ohm.

D ohm·m.

(34) Complete the following statement: "The electromotive force is:

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

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

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

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

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

B all in series.

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

D all in parallel.

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

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

B The power dissipated by each resistor is the same.

C The voltage across each resistor is the same.

D The current through each resistor is the same.

(37) Two resistors $R_1 = 3$ Ω and $R_2 = 6$ Ω are connected in parallel. Compute the net resistance in the circuit.

A 1 Ω.

B 6 Ω.

C 3 Ω.

D 2 Ω.

(38) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

A 0.4 Ω.

B 1 Ω.

C 0.8 Ω.

D 1.7 Ω.

(39) In Figure 6 at the end of the text, the resistance across AB is:

A 0.5 Ω.

B 2 Ω.

C 1 Ω.

D 4 Ω.

(40) 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 $R = \dfrac{\rho A}{L}$.

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

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

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

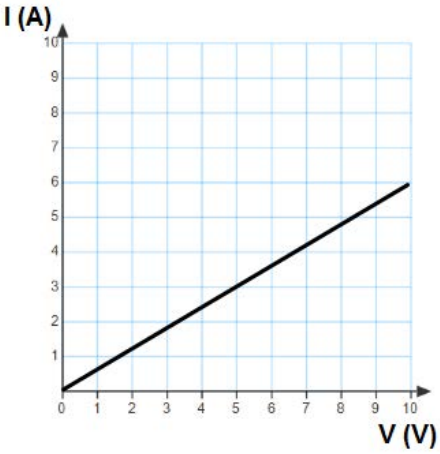

Figura 1

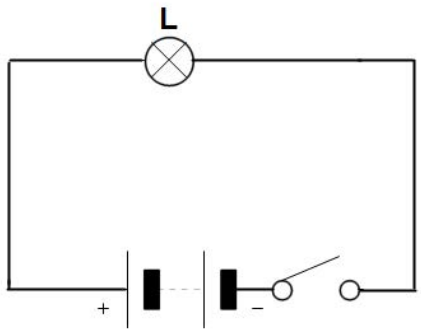

Figura 3

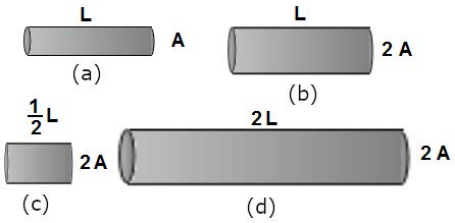

Figura 5

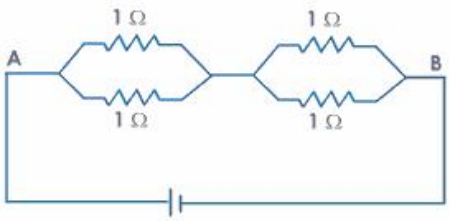

Figura 6

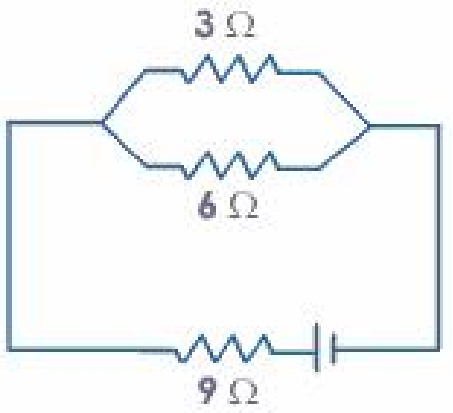

Figura 2

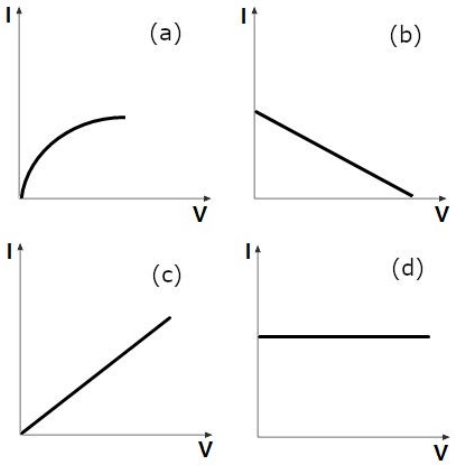

Figura 4

Buon compito ☺

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

Versione 31 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) Complete the following statement: "The electromotive force is:

- [A] the force that accelerates protons through a wire when a battery is connected to it".
- [B] the maximum electric potential energy stored within a battery".
- [C] the force that accelerates electrons through a wire when a battery is connected to it".
- [D] the maximum potential difference between the terminals of a battery".

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

- [A] 50 Ω.
- [B] 100 Ω.
- [C] 25 Ω.
- [D] 0 Ω.

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

- [A] 25 Ω.
- [B] 100 Ω.
- [C] 50 Ω.
- [D] 0 Ω.

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

- [A] Power.
- [B] Resistance.
- [C] Voltage.
- [D] Current.

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

- [A] The total voltage across the resistors is the sum of the voltage across each resistor.
- [B] The current through each resistor is the same.
- [C] The voltage across each resistor is the same.
- [D] The power dissipated by each resistor is the same.

(6) 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] $D \cdot F^2$.
- [B] D^2/F.
- [C] $D^2 \cdot F$.
- [D] $D \cdot F$.

(7) 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] 500 C.
- [B] 400 C.
- [C] 600 C.
- [D] 200 C.

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

- [A] IRt.
- [B] I^2R/t.
- [C] I^2Rt.
- [D] IR^2t.

(9) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the resistance of the wire.

- [A] 0.8 Ω.
- [B] 1.7 Ω.
- [C] 1 Ω.

D 0.4 Ω.

(10) 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 1 Ω.

B 6 Ω.

C 3 Ω.

D 2 Ω.

(11) In Figure 2 at the end of the text,

A 6 Ω, 3 Ω and 9 Ω are in series.

B 3 Ω , 6 Ω are in parallel and 9 Ω is 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.

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

A 30 Ω.

B 10 Ω.

C 810 Ω.

D 270 Ω.

(13) 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 $\frac{R_B}{R_A} = \frac{1}{2}$.

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

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

(14) The unit of current is:

A watt.

B volt.

C ampere.

D coulomb.

(15) The electric current as a function of voltage of a wire is presented by the graph in Figure 1. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 5 W.

B 10 W.

C 15 W.

D 20 W.

(16) The current in a wire:

A depends on both resistance and potential difference.

B depends only on the resistance of the wire.

C depends only on the potential difference applied.

D does not depend on resistance and potential difference.

(17) In Figure 3 at the end of the text, the resistance across AB is:

A 2 Ω.

B 0.5 Ω.

C 4 Ω.

D 1 Ω.

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

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

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

C all in series.

D all in parallel.

(19) A positive charge released from rest:

A does not move.

B moves towards the regions of equal potential.

C moves towards the regions of lower potential.

D moves towards the regions of higher potential.

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

A current / potential difference = constant.

B potential difference / current = constant.

C current = resistance × potential difference.

D potential difference = current × resistance.

(21) 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.

(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 (c).

C (d).

D (a).

(23) 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^2/P.

B $D \cdot P^2$.

C $D \cdot P$.

D $D^2 \cdot P$.

24 Joule/coulomb is same as:

A ohm.

B watt.

C ampere.

D volt.

25 Determine which of the graphs in Figure 5 at the end of the text represents Ohm's law for a solid conductor.

A (c).

B (a).

C (d).

D (b).

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

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

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

27 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 120 J.

B 60 J.

C 30 J.

D 15 J.

28 Determine which one of the following statements concerning resistors in series is *true*.

A The current through each resistor is the same.

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

C The voltage across each resistor is the same.

D The power dissipated by each resistor is the same.

29 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 power.

D resistance.

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

A 40 V.

B 1 V.

C 4 V.

D 100 V.

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

A 36.

B 4.8×10^{15}.

C 6.4×10^{18}.

D 2.2×10^{20}.

32 The resistance of an electric bulb drawing 1.2 A current at 6.0 V is:

A 0.2 W.

B 0.5 W.

C 5 W.

D 2 W.

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

A electrons.

B protons.

C ions.

D atoms.

34 The unit of electric power is:

A watt.

B volt.

C joule.

D ampere.

35 Ohm's law relates potential difference with:

A power.

B energy.

C current.

D time.

36 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 $R = \frac{\rho A}{L}$.

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

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

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

37 A battery is used to:

A measure electric potential.

B measure electric current.

C maintain a potential difference.

D safeguard against short-circuit.

(38) Determine the direction of the conventional current through the light bulb in the circuit presented in Figure 6 at the end of the text.

A Downward.

B Upward.

C To the right.

D To the left.

(39) The resistivity of a wire depends on:

A length.

B length, material and area of cross-section.

C material.

D area of cross-section.

(40) The unit of resistivity is:

A ohm/m^2.

B ohm.

C ohm·m.

D ohm/m.

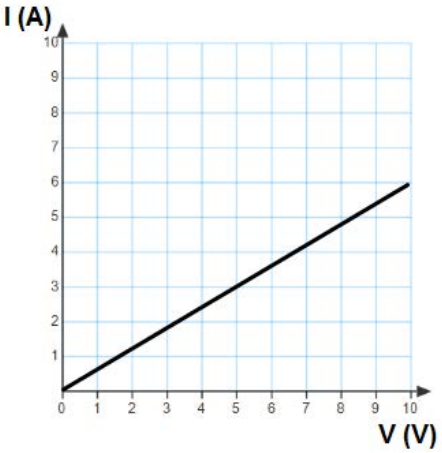

Figura 1

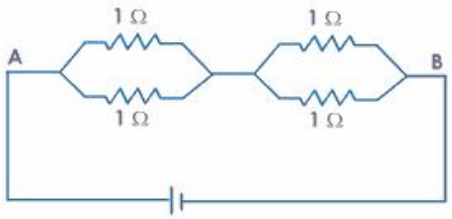

Figura 3

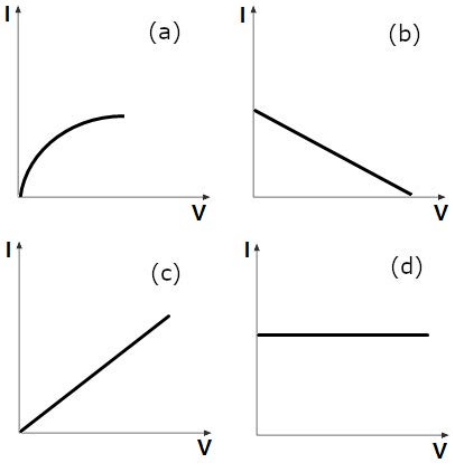

Figura 5

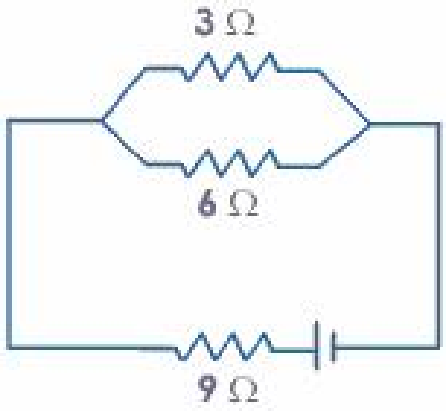

Figura 2

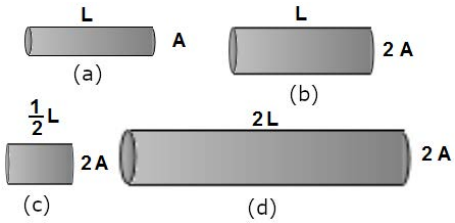

Figura 4

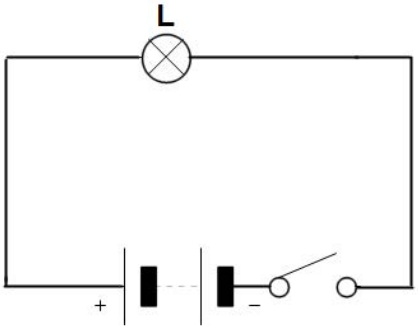

Figura 6

Buon compito ☺

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

Versione 32 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) 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/F.
- [B] $D \cdot F^2$.
- [C] $D \cdot F$.
- [D] $D^2 \cdot F$.

(2) 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] $R = \dfrac{L}{\rho A}$.
- [B] $R = \dfrac{\rho L}{A}$.
- [C] $R = \dfrac{A}{\rho L}$.
- [D] $R = \dfrac{\rho A}{L}$.

(3) The current in a wire:

- [A] depends only on the resistance of the wire.
- [B] does not depend on resistance and potential difference.
- [C] depends on both resistance and potential difference.
- [D] depends only on the potential difference applied.

(4) A battery is used to:

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

(5) The unit of resistivity is:

- [A] ohm/m.
- [B] ohm·m.
- [C] ohm.
- [D] ohm/m^2.

(6) The amount of charge flowing through a cross-sectional area of a wire per unit of time is called:

- [A] Power.
- [B] Current.
- [C] Resistance.
- [D] Voltage.

(7) The unit of electric power is:

- [A] watt.
- [B] ampere.
- [C] volt.
- [D] joule.

(8) The unit of current is:

- [A] ampere.
- [B] coulomb.
- [C] watt.
- [D] volt.

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

- [A] 0.2 W.
- [B] 5 W.
- [C] 0.5 W.
- [D] 2 W.

(10) 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] 3 Ω.

B 2 Ω.

C 1 Ω.

D 6 Ω.

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

A 6.4×10^{18}.

B 2.2×10^{20}.

C 36.

D 4.8×10^{15}.

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

A 0 Ω.

B 25 Ω.

C 50 Ω.

D 100 Ω.

(13) 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 Downward.

B Upward.

C To the left.

D To the right.

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

A The power dissipated by each resistor is the same.

B The voltage across each resistor is the same.

C The current through each resistor is the same.

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

(15) When there is an electric current passing through a wire, the particles moving are:

A ions.

B electrons.

C atoms.

D protons.

(16) The resistivity of a wire depends on:

A length, material and area of cross-section.

B material.

C length.

D area of cross-section.

(17) In Figure 2 at the end of the text,

A 6 Ω, 3 Ω and 9 Ω are in series.

B 3 Ω , 6 Ω and Ω are in parallel.

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

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

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

A 0 Ω.

B 50 Ω.

C 100 Ω.

D 25 Ω.

(19) Two resistors $R_1 = 3$ Ω and $R_2 = 6$ Ω are connected in parallel. Compute the net resistance in the circuit.

A 2 Ω.

B 1 Ω.

C 3 Ω.

D 6 Ω.

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

A current = resistance × potential difference.

B potential difference = current × resistance.

C current / potential difference = constant.

D potential difference / current = constant.

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

A IR^2t.

B I^2R/t.

C IRt.

D I^2Rt.

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

A The voltage across each resistor is the same.

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

C The current through each resistor is the same.

D The power dissipated by each resistor is the same.

(23) In Figure 3 at the end of the text, the resistance across AB is:

A 1 Ω.

B 0.5 Ω.

C 4 Ω.

D 2 Ω.

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

A current.

B time.

C power.

D energy.

(25) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the resistance of the wire.

A 0.4 Ω.

B 1.7 Ω.

C 0.8 Ω.

D 1 Ω.

(26) The work done in moving a unit positive charge across two points in an electric circuit is a measure of:

A current.

B potential difference.

C power.

D resistance.

(27) A positive charge released from rest:

A does not move.

B moves towards the regions of lower potential.

C moves towards the regions of higher potential.

D moves towards the regions of equal potential.

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

A 810 Ω.

B 270 Ω.

C 30 Ω.

D 10 Ω.

(29) Joule/coulomb is same as:

A ohm.

B ampere.

C volt.

D watt.

(30) 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 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω.

C all in parallel.

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

(31) 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 400 C.

C 500 C.

D 200 C.

(32) Determine which of the graphs in Figure 5 at the end of the text represents Ohm's law for a solid conductor.

A (a).

B (c).

C (d).

D (b).

(33) The electric current as a function of voltage of a wire is presented by the graph in Figure 4. Compute the power dissipated in the resistor when the applied voltage is 5 V.

A 20 W.

B 5 W.

C 10 W.

D 15 W.

(34) All of the wires in Figure 6 at the end of the text are made of the same material but are different sizes. Identify the wire with the lowest resistance.

A (d).

B (c).

C (a).

D (b).

(35) 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 120 J.

B 15 J.

C 60 J.

D 30 J.

(36) 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 $\frac{R_B}{R_A} = \frac{2}{1}$.

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

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

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

(37) Complete the following statement: "The electromotive force is:

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

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

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

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

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

A 4 V.

B 40 V.

C 100 V.

D 1 V.

39 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 $\frac{R_Y}{R_X} = \frac{1}{4}$.

40 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 $D^2 \cdot P$.

B $D \cdot P$.

C $D \cdot P^2$.

D D^2/P.

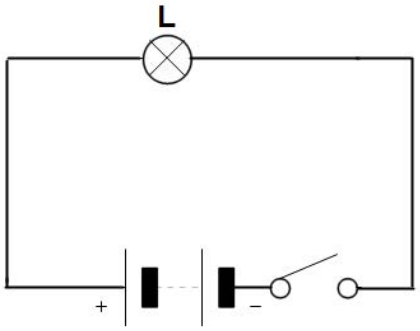

Figura 1

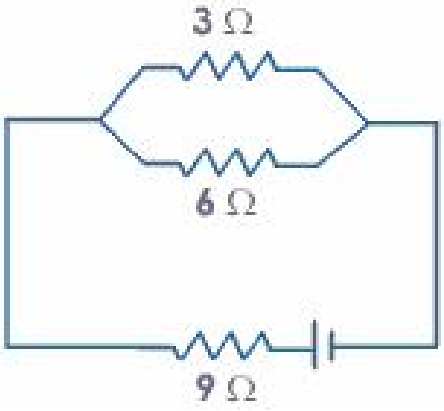

Figura 2

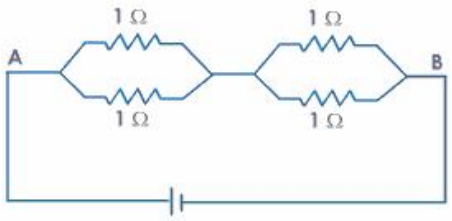

Figura 3

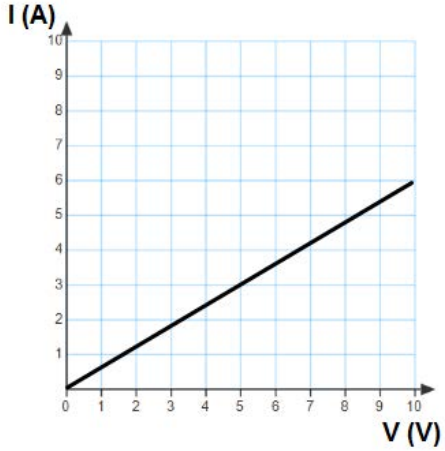

Figura 4

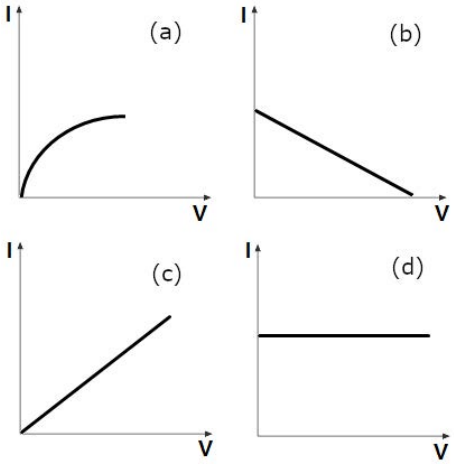

Figura 5

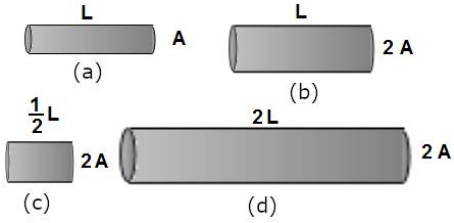

Figura 6