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Science
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UNDER the auspices of the Cairo Teachers Syndicate, the Egyptian Gazette newspaper is interested in boosting community participation and offering services to students through providing the strongest educational content in various subjects. This comes according to the latest standards of the Egyptian Ministry of Education and under the supervision of a group of the best teachers.

Science 3rd prep

Final Revision 3prep second term

Write the scientific term:

1-The potential difference between the poles of an open circuit

2- The change in the concentration of the reactants and the products resulting from the reaction per unit time

3- Elements whose nuclei contain more neutrons than the number needed for stability

4- Chemical reactions in which one element is replaced by another element in one of its salt solutions

5- A metal box found in modern cars to treat harmful gases resulting from fuel combustion

6- The opposition that the electric current faces during its flow in metal conductors

7- Traits that are not transferable from one generation to another

8-The process of spontaneous transformation of the nuclei of some radioactive elements found in nature

9- Arrange the metallic elements in descending order according to the degree of their chemical activity

10- The intensity of the current is directly proportional to the potential difference between the two ends of the conductor when the temperature is kept constant

11- Breaking the bonds between the reactants and forming new bonds between the materials resulting from the reaction?

12- Glands that do not have a duct into which their secretions flow into the blood directly

13- Chemical messages that regulate and coordinate all vital activities of the body

14- A science that studies the similarities and differences between individuals of the same species and how genetic traits are transmitted from one generation to another

The answer

1- electromotive force
2- the rate of the chemical reaction)
3-(radioactive elements).
4-(simple substitution reactions)
5-(catalytic converter).
6-(electrical resistance).
7-(genetic traits)
8-(the phenomenon of natural radioactivity)
9-(the chemical activity series).
10- (Ohm's Law)
11-(chemical reaction)
12-(chemical reaction)
13-(hormones)
14-(genetics)

Choose the correct answer below:

1- The reaction of silver nitrate solution with sodium chloride solution from the reactions
(fast - medium - slow - very slow)

2- It consists of two lobes located in the anterior surface of the neck on both sides of the trachea
(adrenal glands - pituitary gland - thyroid gland - pancreatic gland)

3- Which compound is heated, oxygen gas rises
{HgO - CuCo_ - CaSo_(4)- Cu([OH)] _2 }

4- The hormone responsible for the emergence of female secondary sexual characteristics is .....
(Progesterone - Testosterone - Adrenaline - Estrogen)

5- When copper is added to dilute hydrochloric acid.
(Hydrogen gas escalates - copper chloride is formed - no reaction occurs - copper oxide is formed)

6- When the concentration of the reactants increases during a chemical reaction, the number of collisions between the reacting molecules
(increases - does not change - decreases then increases - decreases)

7- The amount of exposure to radiation workers should not exceed .....
(5 - 8 - 20 - 10)

8- One of the recessive traits in a person is .....
(The presence of dimples - narrow eyes - wide eyes - curly hair)

9- One of the characteristics of direct current is that it is .....
(Constant intensity only - directional variable only - variable intensity and direction - constant intensity and direction)

10 - According to Mendel's first law, the genetic factors ..... when forming gametes
(Duplicate - merge - separate - disappear)

11- It is a chemical treatment that results in an increase in the percentage of oxygen or a decrease in the percentage of hydrogen in it
(Oxidizing agent - oxidation - reduction)

12- Mendel's second law is called the law of (isolation - coulomb – independent assortment of genetic factors).

13- The reaction explain the process of ... $Cl_2 + 2e^- \longrightarrow 2Cl^-$
(dissolution - oxidation - reduction - substitution)

14- If the intensity of the current passing through a resistance of 10 ohms doubles, then the value of the resistance will be ..... at a certain temperature
(5 - 10 - 20 - 40)

15- When nitrogen pentoxide decomposed , gas (nitrogen - oxygen - hydrogen - carbon dioxide) is released.

16- Genes control the apperance of the hereditary characteristics of an organism by producing .....
(hormones - chromosomes - enzymes - vitamins)

The answer

1- fast
2- thyroid gland
3- HgO
4- Estrogen
5- no reaction
6- increases
7- 20
8- narrow eyes
9- constant intensity and direction
10- separate
11- oxidation
12- independent assortment of genetic factors
13- reduction
14-10
15- oxygen
16- enzymes

Put a sign (√) or (x)

1- Electric current is the flow of positive electric charges through metallic conductors
2- Genes control the appearance of an individual's hereditary traits
3- Nuclear waste with strong radiation is buried at medium depths in the ground
4- Mendel left the pea plants to self-pollinate several times to ensure the purity of the trait.
5- The two genetic factors are similar in the heterozygous
6- The transfer of electric charge in two conductors depends on the current strength of the two conductors
7- The Human Genome Project is concerned with the effect of mutations on the functioning of genes
8- When 3 grams of a catalyst is used in a reaction, the mass of the catalyst after the reaction is finished will be less than 3
9- Simple goiter occurs when the hormone thyroxine decreases as a result of calcium deficiency in food
10- Fe +2 $HCl \longrightarrow Fe_2CL_3 + H_2$
11-Deficiency of growth hormone in childhood causes dwarfism

The answer

1- (x). 2- (√) 3- (x). 4- (√) 5- (x). 6- (x). 7- (√) 8-(x). 9- (x). 10- (x). 11- (√)

Give Reason for the following:

1- It is better to use alternating current than direct current
2- The separate earlobe prevails over the connected earlobe.
3- The pituitary gland is called the master of the endocrine glands
4- Do not store silver nitrate solution in aluminum utensils
5- The intensity of the current passing through a conductor decreases with increasing its length
6- Is uranium a radioactive element?
7- Aluminum lags behind in its reaction with hydrochloric acid than zinc, although it is more reactive than it?
8- The rheostat connected in electrical circuits?
9- The pancreas is called a double-functional gland?
10- Does the blue color of copper sulfate disappear when a magnesium strip is added to it?
11- A white precipitate is formed when sodium chloride solution is added to silver nitrate solution?

The answer :

1- Because the alternating current can be converted into a direct current, it can also be transmitted over long and short distances. It is also used in street lighting and the operation of electrical devices.
2- Because the separate ear lobe gene dominates over the attached earlobe gene if they are present together.
3- because it secretes hormones that regulate and coordinate the work of the rest of the other endocrine glands
4- Because aluminum is more active than silver, it replaces it and forms aluminum nitrates and erodes pots.
5-Because if the length increases, the resistance increases, and therefore the current decreases, because the current is inversely proportional to the resistance.
6- Because its nucleus contains more neutrons than the number needed for stability.
7- Because aluminum, when acid is added to it, is covered with a layer of aluminum oxide that takes time to erode, and then the reaction begins
8- Because aluminum, when acid is added to it, is covered with a layer of aluminum oxide that takes time to erode, and then the reaction begins
9-Because it secretes the hormones insulin and glucagon and the work of each of them opposes the work of the other
10- Because magnesium is more active than copper, it expels it and replaces it, and magnesium sulfate is colorless, and copper precipitates in a red color.

$Mg + CuSO4 \longrightarrow MgSO4 + Cu$
(blue colour) (colourless) (Red colour)

11- Because a double substitution reaction takes place, a silver chloride salt is formed, which is insoluble in water.

Extract the irregular word from the following words and then mention what connects the rest of the words:

1- Nature of the reactants - concentration of products - temperature - catalysts
2- Diagnosing and treating some diseases - eliminating pests - manufacturing atomic bombs - oil exploration
3- Dwarfism - diabetes mellitus - cancer - gigantism.
4- Pituitary gland - salivary glands - thyroid gland - pancreatic gland

The answer :

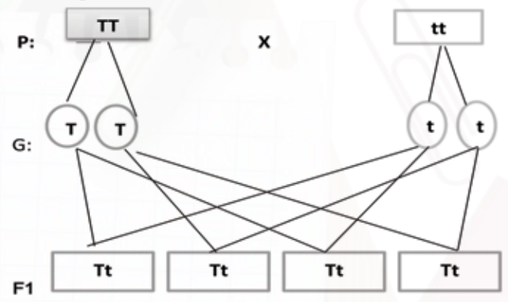
1- Concentration of products .
(factors affecting the rate of a chemical reaction)
2- the manufacture of the atomic bomb.
(peaceful use of nuclear energy)
3-(Cancer) .
Diseases causing from the hormones disorder of the endocrine glands
4- salivary glands
(endocrine glands)

Problems :

1-Using symbols to express the results of mating between ashort stem pea plant (tt) and pure long stem pea plant (TT)

The answer

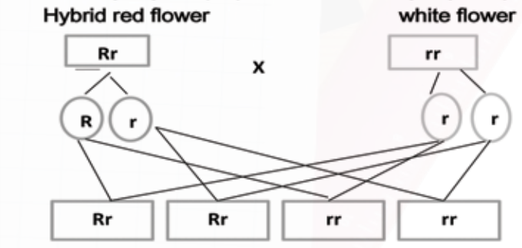
Pur long stem — short stem



100% hybrid long stem

2- Using symbols to express the results of mating between Hybrid red flower pea plant (Rr) and white flower pea plant (rr)

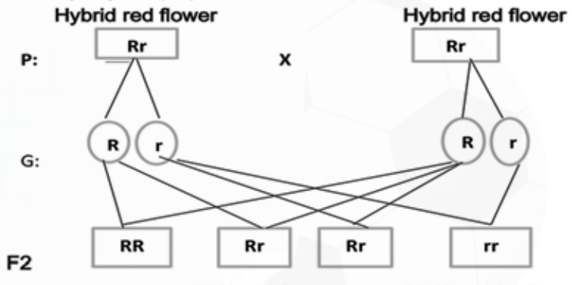
Hybrid red flower — white flower



50% red flower : 50% white flower

3- Using symbols to express the results of mating between hybrid red flower pea plant (Rr) with itself

Hybrid red flower — Hybrid red flower



75% red flower : 25 % white flower

- Explain with balanced symbolic equations the interaction of each of:

1- dilute hydrochloric acid with sodium carbonate

$Na_2CO3 + 2\,HCl \xrightarrow{dill} 2NaCl + H_2O + CO2$

2- The reaction of sodium with water

$2Na + 2\,H_2O \longrightarrow 2NaOH + H_2 + Heat$

3- Heating blue copper sulfate

$-Cu\,SO_4 \xrightarrow{\Delta} CuO + SO_3\uparrow$

problem 1:

- Calculate the current resulting from the passage of an electric quantity of 3600 coulombs through a section of a conductor in 5 minutes.

the solution
Time = 5 x 60 = 300 seconds
Current intensity = Electricity ÷ Time = = 3600 ÷ 300 = 12 amps

problem 2:
Calculate the amount of work required to transfer an electric charge of 40 coulombs across a section of a conductor with a resistance of 20 ohms and a current of 2 amperes.
Potential difference = current x resistance = 2 x 20 = 40 volts
Work = potential difference x amount of electricity = 40 x 40 = 1600 joules

problem 3: in the opposite figure

- If the reading of the ammeter is 0.1 ampere, the resistance of the lamp is 60 ohms, and the electromotive force of each of the columns constituting the battery is 1.5 volts

Calculate the number of poles in the battery?
A): V= I xR = 0.1 x 60 = 6 volts
Number of columns = 6 ÷ 1.5 = 4 columns