Science

Prep.3

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Final Revision

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* طبقاً لأخر تعديل في المادة للعام الدراسي 2024-2025

Final Revision

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(1) Write the scientific term :

1)	It is an electric current with constant intensity and flows in one direction through the electric circuit.	(.....)
2)	They are ductless glands that secrete their hormones directly in the blood.	(.....)
3)	The hereditary trait that appear in all individuals of the first generation in Mendel's experiments.	(.....)
4)	Flowing of the negative charges (electrons) in a conductor.	(.....)
5)	A chemical process which decreases oxygen percentage in the substance	(.....)
6)	Used in some electric circuits to control current intensity as the resistance directly proportional with the length of wire.	(.....)
7)	The opposition that the electric current faces during its flow in the conductor.	(.....)
8)	The change in the concentration of the reactants and the products in a unit time.	(.....)
9)	A chemical message that controls and regulates activities and functions of most of the body organs.	(.....)
10)	It is the quantity of electricity in coulomb or the electric charges flowing through a cross-section of the conductor in one second .	(.....)
11)	The enzyme which is found in sweet potato and accelerates the decomposition rate of hydrogen peroxide	(.....)
12)	The metallic can exists in most modern cars to treat the harmful gases emitted from the engine.	(.....)
13)	The charge transferred by a constant current of intensity of one ampere in one second.	(.....)
14)	A substance which changes the rate of chemical reaction without being changed.	(.....)
15)	They are chemical substances produced by the body of living organism act as catalysts to increase the speed of biological reactions.	(.....)
16)	The measuring unit for absorbed nuclear radiation.	(.....)

17) The breaking up of bonds in reactants molecules and formation of a new bonds in the products molecules in the reaction. (.....)

18) It is value of the work done to transfer a quantity of electric charges of one coulomb between the two poles of this conductor (.....)

19) The hereditary traits are not be transmitted from one generation the another. (.....)

20) The reaction between an acid and an alkali to give salt and water (.....)

21) The resistance of a conductor which allows passing of an electric current intensity of one ampere when the potential difference across its terminals is one volt. (.....)

22) The cells which the hormones affect and they are almost located away from the endocrine gland that secrets hormone. (.....)

23) A disease caused as a result of decreasing the secretion of the growth hormone at the childhood (.....)

24) Trait that disappeared in the first generation. (.....)

25) The individual who carries a similar pair of hereditary genes whether the genetic pair is dominant or recessive (.....)

26) The science that researches in the similarities and difference between the individuals in the same species (.....)

27) The hormone which is responsible for the appearance of the male secondary sex characteristics (.....)

28) It is the state of an electric conductor that shows the transfer of the electricity from or to it, when it is connected to another conductor. (.....)

29) An arrangement of the metals elements in a descending order according to their chemical activity. (.....)

30) The potential difference between the two poles of the battery when the electric circuit is open. (.....)

31) The hormone which secreted from the pituitary gland to controls the speed rate of growth of muscles and bones. (.....)

32) The individual who carries two genetic factors one of the dominant trait and the other of the recessive trait. (.....)

33) Organs secrete hormones di[illegible] in the blood stream. (.....)

34) The flow of electric nega[illegible]ges through a conducting material. (.....)

35) Chemical reactions in which an element substitutes another one. (.....)

36)	The appearance of a hereditary trait in the individuals of the first generation when two individuals are crossed over, one of them carries a pure trait contrasting the trait carried by the other individual	(.....)
37)	A chemical substance that controls and regulates the functions of the most body organs.	(.....)
38)	A disease that occurs due to the increase in the secretion of the thyroxin hormone.	(.....)
39)	They are parts of DNA on the chromosomes and control the hereditary traits of the individual.	(.....)
40)	A chemical process which increase oxygen percentage in the substance.	(.....)
41)	Through which the hereditary traits are transmitted from parents to offspring.	(.....)
42)	Chemical reactions in which a catalyst speeds up their rate.	(.....)
43)	It is a reaction where double substitution occurs between the ions of two compounds to form two new compounds.	(.....)
44)	The substance which loses one or more electrons in a chemical reaction.	(.....)
45)	The type of the chemical reaction which involves the breaking up of the compound into simple elements by the effect of heat	(.....)
46)	The process of spontaneous decaying of atoms nuclei of some radioactive elements that are present in nature.	(.....)
47)	The electric current that is produced from convert mechanical energy into electric energy by means of the dynamo.	(.....)
48)	The result when one of the endocrine glands does not work properly.	(.....)
49)	Chemical compound which is resulted from the reaction of acid with alkali.	(.....)
50)	Hormone is responsible for female secondary sex character.	(.....)
51)	A chemical process in which the atom loses an electron or more.	(.....)
52)	The trait that appears in all individuals of the first generation in Mendel's experiment.	(.....)
53)	A device that is used to [illegible] the electromotive force	(.....)

✹(2) Choose the right answer:

1.Direct current can be produced from .....

a. electrochemical cells. b. electric generators. c. electric power stations.

2.The reaction of oil with caustic soda is one of the ..... reactions.

a. very fast b. relatively slow c. very slow

3.A hormone called ..... stimulates the release of stored sugar from the liver.

a. estrogen b. glucagon c. insulin

4.On heating red mercuric oxide, it decomposes into .....

a. oxygen. b. mercury. c. oxygen and mercury. d. no correct answer.

5.At the beginning of the reaction the percentage of the reactants concentration equal

a. 100% b.0% c. 50% d. no correct answer

6.The mathematical relation of the Ohm's law is .....

a . $R=\frac{V}{I}$ b. $I=\frac{R}{V}$ c. R=I xV d. no correct answer

7.Four similar electric cells, are connected in series each one has e.m.f. of 1.5 volt, so the total e.m.f. equal .....volt.

a. 3 b. 6 c. 1.5 d. 12

8.Measuring unit of the quantity of electricity is .....

a. ampere. b. coulomb. c. volt. d. joul.

9..... hormone, liberates the energy necessary for the body from food.

a. Growth b. Estrogen c. Thyroxin d. Progesterone

10.At the end of the chemical reaction, the concentration of the reactants is .....

a. zero % b. 25% c. 50% d. 100%

11.Substance which change rate of the reaction without being changed is .....

a. oxidizing agent. b. active agent. c. catalyst. d. reducing agent.

12.When added copper filings to diluted hydrochloric acid, ...

a. copper oxide is formed. b. copper chloride is formed.
c. hydrogen gas is formed. d. no chemical reaction occurs.

13.The hormone that controls the calcium levels in the blood is ..... hormone.

a. calcitonin b. adrenalin c. estrogen d. insulin

14.From the properties of direct current is .....

a. change intensity. b. change direction.
c. constant intensity and direc... d. change intensity and direction.

15.The hormone that promo... growth of endometrium is the .....hormone.

a. testosterone b. prog...on c. estrogen d. ...

16.All the following elements replace hydrogen of the diluted acid except .....

a. Al b. Zn c. Au d. Sn

17.Calcitonin hormone controls ..... level in the blood.

a. potassium b. oxygen c. calcium d. iron

18.When magnesium replaces copper in a solution of one of its salts, a ..... precipitate is formed.

a. black b. green c. red d. blue

19.The two factors of a hereditary trait are similar in the ..... individual.

a. pure b. hybrid c. recessive d. (a) and (c) together

20.Oxidization is a chemical process which increases ..... percentage in substance.

a. hydrogen b. oxygen c. helium d. fluorine

21.The use of the sliding rheostats is ..... of the electrical circuits.

a. change resistance
b. measurement of current intensity
c. measurement of the electric potential difference
d. measurement of electromotive force

22.The increase in the concentration of the reactants during the chemical reaction, the ..... in the number of collisions between molecules.

a. decreases b. increases c. equal

23.A reaction between an acid and an alkali to from salt and water is ..... reaction.

a. reduction b. neutralization c. simple substitution

24.The scientists ..... discovered the means of how the gene controls the appearance of a hereditary trait.

a. Watson and Crick b. Badel and Tatum c. Aly Mostafa and Becquerel

25.On connecting 5 electric cells have the same electromotive force on parallel, the e.m.f of each cell is 2.5 volts, so the total e.m.f equals .....volts.

a. 2.5 b. 5 c. 7 .5 d. 12.5

26.Mendel covered ..... of the pistils of a pea plant, to avoid cross pollination.

a. sepals b. stigmas c. stamens d. petals

27.Ohmmeter is a device used to measure .....

a. potential difference. b. electric intensity.
c. electric resistance. d. quantity of electricity.

28.Sodium replaces the following metals in their salt solutions except for .....

a. copper. b. potassium. c. magnesium. d. zinc.

29.Mendel covered ..... of a [illegible] plant to avoid cross pollination.

a. stamens b. [illegible] c. sepals d. petals

30.Sweet potato includes ox[illegible]yme which helps in decomposition of .....faster.

a. hydrogen chloride b. sodium chloride
c. hydrogen peroxide d. sodium carbonate

31.The measuring unit for absorbed nuclear radiation is the .....

a. Joule. b. Sievert. c. Coulomb. d. Ampere.

32.The ..... is one example of electrochemical cells.

a. dynamo b. dry cell c. rheostat d. voltmeter

33.From the dominant traits in human being .....

a. straight hair. b. wide eyes.
c. absence of dimples. d. attached ear lobe.

34.Air bag contains sodium .....

a. sulphate. b. azid. c. oxide. d. carbonate

35.All the following are considered reduction process except .....

a. gaining hydrogen. b. losing oxygen. c. gaining electrons. d. losing electrons.

36.Electric resistance is 20 ohms, if the current intensity passing through it is doubled its value becomes ..... ohms.

a. 10 b. 20 c. 30 d.40

37.The genetic structure of gametes of pea plant of wrinkled and yellow seeds .....

a. yyRR. b. YYrr. c. yyrr. d.YYRR.

38.When Copper Sulphate is heated, a deposit .....

a. black. b. green. c. blue. d. reddish.

39.Which of the following the dominant trait of the human .....

a. straight hair. b. narrow eyes. c. no freckles. d. attached ear lobes.

40.All following are from factors that affect of the rate chemical reaction except .....

a. concentration of reactants. b. nature of the reactants.
c. nature of the products. d. temperature of the reaction.

41.If a pollination takes place between 2 hybrid individual the product is 60 individual, so the number of produced hybrid individuals may be ..... individual.

a. 15 b. 50 c. 30 d. 10

42.The hormone that is responsible for the appearance of male secondary sex characteristics is the ..... hormone.

a. insulin b. progesterone c. testosterone d. adrenaline

43.The ratio between the potential difference across two ends of a conductor and the electric current intensity passing through it is equal to .....

a. electromotive force. b. work done.
c. quantity of electricity. d. electric resistance.

44.If mating occurs between ... viduals, both of them are hybrid and 200 members resulted from this mating, the... hybrid members produced by... individual.

a. 50 b. 100 c. 150 d. 200

45. If an electric current intensity of 2 ampere flows through a conductor in 2 min then the quantity of electricity flowing through the conductor will be .... coulomb.

a. 4 b. 12 c. 120 d. 240

46. When a sodium atom loses an electron from its outer most energy level so it ....

a. oxidized only.
b. reduced only.
c. becomes reducing agent only.
d. oxidized and becomes reducing agent.

47. When there is a sudden decrease in the car speed, the sodium azid is decomposed into .... gas.

a. N_2 b. H_2 c. O_2 d. CO_2

48. To transfer electric charge of 10 coulomb between two points the potential difference between them is 20 volts, ... joules are needed.

a.21 b. 2 c. 20 d. 200

49. By moving the slider of the Rheostat to increase the length of its wire during connecting it in an electric circuit ....

a. the current intensity increases and no change in the resistance.
b. the current intensity doesn't change and the resistance increases.
c. the current intensity decreases as the resistance increased.
d. the current intensity increases as the resistance decrease

50. The reaction : $Cl_2 + 2e^- \rightarrow 2Cl^-$, represent ....process.

a. oxidation b. reduction c. decomposition d. substitution

51. The quantity of electricity flow in a conductor on passing electric current of intensity (2 ampere) through a cross-section of a conductor within a time (20 minute) equal .... coulomb.

a. 10 b. 20 c. 40 d. 2400

52. In adding silver nitrate solution to sodium chloride solution, ...precipitation is formed from silver chloride.

a. red b. blue c. black d. white

53. The adrenalin hormones is secreted from ....to stimulate the body's organs to respond to emergencies.

a. the two ovaries b. the two testes c. the adrenal glands d. thyroid gland

54. The pancreas secretes a hormone called ....which reduces the level of sugar in the blood.

a. glucagon b. progesterone c. insulin d. estrogen

55. The most active metal in the chemical activity series is ....

a. copper. b. sodium c. hydrogen. d. aluminum.

56. The .... is used to control the resistance in the electric circuit.

a. rheostat b. ammeter c. voltmeter d. ohmmeter

57.Thermal decomposition of copper carbonate gives .....

a. copper+ water. b. copper+ carbon dioxide.
c. copper oxide+ carbon dioxide. d. copper oxide+ water vapor.

58.The active metal can replace the hydrogen of water which rises and produces .....

a. metal hydroxide. b. metal oxide.
c. metal carbonate. d. metal sulphate.

59.The measuring unit of the electric current intensity is .....

a. ohm. b. ampere. c. volt. .coulomb.

60.White sodium nitrates decompose by heat into ..... and oxygen.

a. sodium nitrite b. nitrogen c. sodium oxide d. ammonia

61.The ..... apparatus is used for measuring the electric current intensity.

a. ohmmeter b. voltmeter c. ammeter d. rheostat

62.Clear lime water turbid on passing ..... gas through it.

a. nitrogen dioxide b. suphur dioxide
c. carbon dioxide d. (a and b) are correct

63.Alternating current is characterized by .....

a. constant intensity. b. variable direction.
c. variable intensity and direction. d. variable intensity.

64.The neutralization reaction occurs between .....

a. metal and non-metal. b. acid and salt.
c. copper and carbon. d. acid and alkali

65.All the following units measuring the current intensity except .....

a. ampere. b. coulomb / second. c. joule / coulomb. d. volt / ohm.

66.The electrical resistance can measured by us in .....

a. ohmmeter. b. voltmeter. c. ammeter. d. rheostat.

67.One of the properties of the alternating current is .....

a. constant intensity. b. constant direction.
c. variable direction and constant intensity. d. variable intensity and direction.

68.The hormone which stimulates body organs to respond for emergencies is .....

a. insulin. b. glucagon. c. adrenaline. d. estrogen.

69.One of the properties of direct current is .....

a. constant value and direction.
b. constant value but variable di... on.
c. variable value but constan... ion.

70.When magnesium repla... in its salt solution, a ..... precipitate is formed.

a. black . b. ... c. reddish brown

71.The ..... hormone liberates the needed energy from the food stuff.

a. growth. b. estrogen. c. thyroxin.

72.The ..... is the only way for hormones to reach the target cells.

a. saliva b. blood c. water d. ducts

73.Generating an alternating electric current is by using the .....

a. rheostat. b. dynamo. c. dry cell. d. voltmeter.

74.All the following metals replace hydrogen of acid except .....

a. potassium. b. magnesium. c. silver. d. zinc.

75.From compounds which are decomposed by heat into metal and oxygen is .....

a. $Cu(OH)_2$ b. $CaSO_4$ c. $CuCO_3$ d. HgO

76.From the dominant traits in the human being is the ..... trait.

a. straight hair b. wide eyes

c. absence of dimples in the face d. presence of freckles in the face

77.According to Mendel's second law, each pair of the alternative traits is inherited independently of the others and appears in the second generation at a ratio of .....

a. 1 : 1 b. 2: 1 c. 3 : 1 d. 4: 1

78.Carbon dioxide evolves during thermal decomposition of ..... compound.

a. HgO b. $CuSO_4$ c. $CuCO_3$ d. $Cu(OH)_2$

79.The ratio between the potential difference across two ends of a conductor and the electric current intensity passing through it is equal to .....

a. e.m.f. b. electric current.

c. quantity of electricity. d . electric resistance.

80.Double substitution reactions between salt solutions are accompanied by formation of .....

a. metal. b. a precipitate. c. an oxide. d. a non-metal.

81.The nuclear energy is peacefully used in the industrial field to convert sand to ..... for manufacturing computer processors.

a. electric energy b. silicon sheets c. nuclear fuel d. atomic bombs

82.The scientists ..... discovered the means of how the gene controls the appearance of the hereditary trait.

a. Mendel and Newton c. Johansen & Mendel

b. Watson and Crick d. Badel and Tatum

83.On adding silver nitrate solution to sodium chloride solution, ... is formed.

a. a white precipitate of sodium nitrate b. a white precipitate of silver chloride

c. a blue precipitate of silver chl... d. ...precipitate

84.When hydrochloric acid r... with sodium carbonate, then the reaction produces gas which .....

a. turbid limewater. c. increases ignition.

b. burns with pop sound. d. its color is red brown.

85.The charge transmitted by a constant current of intensity one ampere in one second is .....

a. coulomb. b. volt. c. joule. d. ohm.

86.The reaction in which double substitution occurs between the ions of two compounds to form two other new compounds is called..... reaction.

a. double substitution b. simple substitution
c. neutralization d. oxidation and reduction

87.Mendel chose the garden pea plant to conduct his researches for these reasons except one of them, ...

a. it is easy to be planted the pea plant. b. it can self-pollinate.
c. it can easily be artificially pollinated. d. its life cycle is long.

88.Man suffers from ..... disease when his food lacks of iodine.

a. dwarfism b. diabetes c. gigantism d. simple goiter

89.The rate of breaking up of hydrogen peroxide increases by the addition of .....

a. manganese oxide. b. magnesium oxide. c. manganese dioxide.

90.The speed of most chemical reactions is ..... by rising temperature.

a. increased b. decreased c. not affected

91.When passing hydrogen gas on hot black copper oxide, ... process occurs for copper oxide.

a. oxidation b. reduction
c. thermal decomposition d. (a) and (b) together

✸(3) Complete the following :

1. $Zn+2HCl \rightarrow$ ..... + ...
2. The ability to roll the tongue is one of the ..... traits, while the attached ear lobe is one the ..... traits in the human.
3. The pea plant is characterized by it can be easily ..... and its short life cycle.
4. The hormone controls speed of growth rate of body muscles and bones is ..... hormone.
5. The ..... effects of radiation is a result of changing in the sex chromosomes composition of the cell.
6. In human, the traits of the blue narrow eyes are considered as ..... hereditary traits.
7. The..... apparatus is used to measure the electromotive force of a battery in unit known as .....
8. The ..... is considered a part of DNA which consists of smaller structural units called .....
9. The ..... current can be transferred for short distances only, while the ..... current can be transferred for short and long distances.
10. During ..... reaction, the compound is decomposed by heat into its simple components, and in the ..... reaction a metal substitutes another one in its salt solution.
11. The ..... electric current is used in electroplating, while the ..... electric current is used in lighting streets and operating electric appliances.
12. During Mendel's experiments, he removed the stamens from the flowers before they become mature to prevent ..... pollination, and he covered stigmas flowers to prevent ..... pollination.
13. The ..... is used to measure the potential difference.
14. Na_2CO_3 +..... $\rightarrow 2NaCl + H_2O + CO_2$
15. Thyroid gland secretes two hormones ..... and .....
16. The curly hair trait dominates the straight hair trait that follow ..... principal in the human being.
17. ..... is the project co... with effect of different mutations on work of genes.
18. The reactions of covalent co... ds are slower because they take place between ..... .
19. Genes are DNA parts present on .....

20. If the secretion of the growth hormone decreases at the childhood, the human suffers from .....

21. Every hereditary trait is controlled by two hereditary factors, the two hereditary factors in every trait separate when the ..... are formed.

22. The ..... hormone liberates the needed energy from.the food stuff.

23. The measuring unit for absorbed nuclear radiation is .....

24. Sweet potato contains ..... enzyme which helps in decomposition of hydrogen peroxide.

25. The measuring unit of work is ..... , whereas the measuring unit of amount of electricity is .....

26. Reaction between an acid and an alkali forms ..... and .....

27. During the chemical reaction, the concentration of reactants gradually ..... , whereas the concentration of products gradually .....

28. An instrument called ..... is used to measure the electric current intensity, whereas the electric resistance is measured by an instrument called .....

29. The speed of chemical reaction can be measured by the rate of appearance of one of ..... substances.

30. To respond to emergencies adrenal gland secretes ..... hormone.

31. When four cells are connected in a parallel way and the e.m.f for each one 1.5 volt. The e.m.f for the battery = ... volt.

32. When the amount of iodine in food decreases , the secretion of ..... hormone decreases from ..... gland.

33. Natural ..... elements like rubidium, the atom's nuclei of these element contain a number of ..... more than the number required for its stability.

34. The electric current produced from electrochemical cells is ..... current.

35. The breaking up of bonds in the molecules of reactants and the formation of new bonds in the molecules of product is c... .....

36. The compound decompose... at in... its simple components in ..... reactions.

37. They are parts of DNA p... ...e chromosomes and control the hereditary traits of the individual is known as .....

38. The voltmeter is connected to the electric circuits in ..... and ammeter is connected in .....

39. Hormone ..... controls the calcium levels in the blood, while hormone .... promotes the growth of endometrium.

40. In the reaction of sodium with chlorine to form sodium chloride, ... is considered as an oxidizing agent, and ..... is considered as a reducing agent.

41. Some traits are transmitted from one generation to another they are called ....., and some traits are not transmitted from one generation to another they are called .....

42. The ..... is used to measure the electromotive force of a battery.

43. The chromosome is chemically consists of a nucleic acid called ..... combined with .....

44. ..... gas evolves when sodium reacts with water, while ..... gas evolves on heating blue copper sulphate.

45. The sources of nuclear radiation pollution are divided into ..... and .....

46. Electric current intensity is ..... proportional to potential difference between two terminals of a conductor at a constant temperature.

47. The electric resistance measured with ..... device, and its unit of measure is .....

48. Each hereditary traits controlled with ..... , separated when ..... are formed.

49. Nitrogen pentaoxide breaks up into ..... gas and ..... gas.

50. The electric current is generated from a dynamo due to converting ..... energy to ..... energy.

51. The reaction of covalent compounds are ..... than of the ionic compounds.

52. Increase of secretion in the growth hormone at the childhood cause ..... disease.

53. The traits that are transmitted from one generation to another is the .....

54. Chemical reaction is ..... in the reactant molecules, and ..... in the products molecules.

55. Most metals ..... dec[illegible]

56. The ..... is used to [illegible] the electromotive force of the battery, its measuring unit is called .....

57. When magnesium replaces copper in its salt solution a precipitate its color is ..... is formed.

58. When glucose level is increased in blood, the pancreas secretes ..... hormone.

59. When the amount of glucose decreases in the blood, pancreas secretes ..... hormone.

60. Transmission of electric charges depends on the ..... between two conductors.

61. ..... hormone is responsible for female secondary sex character.

62. The traits that are not transmitted from one generation to another are called ..... traits.

63. ..... is from the examples of electrochemical cells.

64. The chemical energy is converted into electric energy by ..... cells.

65. Neutralization it is the reaction between an acid and an alkali forming ..... and .....

66. During the chemical reaction, the concentration of ..... decreases, while the concentration of ..... increases by the time.

67. The resistance of a conductor that (1) ampere is passed through it when the potential difference between its terminal is (1) volt = ...

68. Carbon dioxide gas detected by changes ..... into turbid.

69. In the beginning of the reaction, the concentration of the reactants is ..... %

70. The scientist ..... is the founder of heredity.

71. The instrument which is used to measure the electric potential difference is .....

72. Sodium metal reacts with water producing sodium hydroxide and ..... gas evolves.

73. Every hereditary trait is controlled by two hereditary factors which separate during formation of the .....

74. The curly hair trait dominates over the straight hair trait is follows the principle of ..... in human being.

75. Some reactions are very slow and need several months to take place, such as the formation of .....

76. The..... project is interested in the effect of the various mutations on the function of the genes.

✹(4) Correct the underlined words:

1	Most metal carbonates decompose by heat to metal oxide and **nitrogen** gas evolves.	……
2	The reactions of ionic compounds are **slower** than those of the covalent compounds	……
3	**Estrogen** promotes the growth of endometrium	……
4	**Ohm** is the measuring unit for absorbed nuclear radiation.	……
5	Alternating current is characterized by **constant** intensity and direction	……
6	**Oxidation** is a chemical process in which an atom gains one electron or more.	……
7	In **positive catalysts** reaction, catalyst is used to slow down the chemical reaction.	……
8	The **attached** ear lobe from dominant hereditary trait.	……
9	In the dry cell the **magnetic** energy change to electric energy	……
10	Mendel removed the **petals** of pea flowers to prevent self-pollination.	……
11	The **acquired** traits are transmitted from one generation to another	……
12	Genes are parts of DNA found in the **cytoplasm** of the cell.	……
13	The **Ammeter** is connected in parallel in the electric circuit.	……
14	On fearing and anger, the secretion of **thyroxin** hormone increases.	……
15	Some chemical reaction are very slow, because it may takes million of years to occur such as the formation of the **iron rust**	……
16	Mendel chose **ten** hereditary traits in the pea plant to perform his experiments	……
17	By using 3gm of catalyst in an experiment. Its mass after finishing the reaction is **less than** 3 gm	……
18	Rate of reaction of the dilute hydrochloric acid with iron filling is **slower** than that with the same mass of a piece of iron	……
19	Dwarfism disease results from decrease of secretion of the **insulin** hormone at the blood	……
20	The measuring unit of electromotive forces for the electric cell is **ampere**	……
21	**The iron rust** is a fast chemical reaction	……

22	The **chemical** energy can be converted to electrical energy by using the electric generator (dynamo).	……
23	Nitrogen pentoxide breaks up into nitrogen dioxide gas and **nitrogen** gas	……
24	Hormones are secreted in the body by some organs called **ductile glands**	……
25	The **estrogen** hormone liberates the needed energy from the food stuff	……
26	The reactions of the covalent compounds are **fast**	……
27	Most metal carbonates decompose by heating into **metal** and carbon dioxide.	……
28	The reactions which take place inside the Earth to form **iron rust** may take millions of years.	……
29	**Current intensity** is the state of an electric conductor that shows the transfer of electricity from or to it, when it is connected to another conductor.	……
30	When the blood sugar level decreases, the pancreas secrete the hormone **insulin**.	……
31	On adding piece of magnesium to copper sulphate solution **black** precipitates is formed.	……
32	Nitrogen pentoxide breaks up into nitrogen dioxide gas and **nitrogen** gas.	……
33	On decreasing of sugar level in the blood, the **liver** responds by secreting glucagon hormone.	……
34	The ionic compounds are fast in their reactions, because they decompose into **molecules** that easily share in the reaction.	……
35	When we add silver nitrate solution to sodium chloride solution, a **black** precipitate is formed	……
36	The electromotive force of three similar cells connected in parallel is **twice** the electromotive force of one cell.	……
37	Mercuric oxide is **silvery** colour	……
38	The radioactivity phenomenon was discovered by the scientist **George Simon**	……
39	Rate of chemical reaction depends on the concentration of the **products**	……
40	The electric current that produced from the **dynamo** flows in one direction.	……
41	Each **chromosome** produ… pecial enzyme which is responsible for produci… of …	……
42	The nuclei of radioact… s contain number of **protons** more than the number required … r its stability	……
43	The **estrogen** hormone is secreted on increasing percentage of glucose sugar in the blood.	……

44	Voltmeter is connected in the electric circuit in **series**	……
45	**Ohmmeter** is used to measure the current intensity.	……
46	The **glucagon** hormone controls the calcium levels in the blood.	……
47	The nucleus of each cell carry a complete group of **hormones** which is responsible for appear the hereditary traits in living organisms.	……
48	Rate (speed) of chemical reaction is increased by **decreasing** the temperature.	……
49	When we add silver nitrate solution to sodium chloride solution a white precipitate is formed of **sodium nitrate.**	……
50	The **catalyst** is the substance which loses one or more electrons during the chemical reaction.	……
51	**Watson and Creek** scientists discovered the means of how gene controls the appearance of a trait.	……
52	When pancreas stops secreting insulin hormone, the level of glucose sugar **decreases** in the blood.	……
53	The increase of growth hormone secretion in the childhood causes **dwarfism**.	……
54	Chromosome is chemically consists of nucleic acid DNA is bind with **fats**.	……
55	**Oxygen** gas detected by changes limewater into turbid.	……
56	**Iron** element participates in the composition of thyroxin hormone.	……
57	From uses of nuclear energy in **medical** field eliminate pests and improve some plants races.	……
58	**Ammeter** apparatus is used to measure electric potential difference.	……
59	The two scientists **Padel & Tatum** made a model for DNA molecule.	……
60	In the circuit of the direct current, **molecules** flow from one of the two poles to the other in the electrochemical cell.	……
61	The unit of measuring the electric charges is **volt**.	……

✹(5) Give reason for:

1. Some people suffer from simple goiter.

.....

2. Copper doesn't react with dilute hydrochloric acid whereas zinc reacts with it.

.....

3. The rate of chemical reaction increases by increasing concentration of reactants.

.....

4. A red precipitate is formed when magnesium is added to copper sulphate solution.

.....

5. Mendel covered the stigmas of the pistils of pea flowers during studying the hereditary traits.

.....

6. Mendel choose the garden pea plant to conduct his experiments.

.....

7. Learning to walk in children is not considered a genetic trait.

.....

8. Adding a piece of sweet potato enhances the decomposition of the hydrogen peroxide.

.....

9. A white precipitate is formed on adding silver nitrate solution to sodium chloride solution.

.....

10. Blood stream is the only way for hormones to reach their sites of action.

.....

11. Charging the mobile phone requires electric transformer.

.....

12. Reaction between covalent compound are slow, whereas reaction between Ionic compounds are fast.

.....

13. Diluted Hydrochloric acid does not react with the copper.

.....

14. The fridge is used to preserve food.

.....

15. Reactions between ionic compounds are fast whereas reactions between covalent compounds are slow.

.....

16. Pancreas is a dual functional (has two functions).

.....

17. Sodium is from the reducing agents while chlorine is from the oxidizing agents.

.....

18. The ability to roll the tongue is one of the dominant traits in the human being.

.....

19. Nuclear radiation has genetic effects.

.....

20. The free ear lobe trait dominates the attached ear lobe trait.

.....

21. Rheostat is used in some electric circuits

.....

22. The pituitary gland is called the master gland.

.....

23. Uranium element is consider from radioactive elements.

.....

24. Blood is the only way for the hormone to reach its site of action (target cells).

.....

25. A continuous growth in the limbs' bones of some persons so the person becomes a giant.

.....

26. The combustion of steel scours used for cleaning aluminum in jar contains oxygen is faster than its combustion in the air.

.....

27. Mendel removed the stamens from the flowers of pea plant during his experiments.

.....

28. It is preferred to use alternating current more than direct current.

.....

29. Food preservation in the freezer of the refrigerator.

.....

30. Some electric circuits contain variable resistance.

.....

31. The rate of the reaction of hydrochloric acid with the iron filings is faster than that with a piece of iron of the same mass.

.....

.....

.....

32. A gas evolves on putting a piece of aluminum in diluted hydrochloric acid .

.....

33. Speed of chemical reaction increases with rise in temperature.

.....

34. When a yellow pod pea plant is pollinated with a pure green pod pea plant, they produce plants that are all with green pods.

.....

35. Some people who depend mainly on eating rice have deficiency in vitamin (A).

.....

36. Although aluminum comes before zinc in chemical activity series, but it takes a longer time to react with hydrochloric acid practically.

.....

37. Some electric cells are connected in the electric circuit in series.

.....

38. The voltmeter is connected between the two poles of battery.

.....

✹(6) What happen if:

1. Decrease the amount of growth hormone in the childhood.

.....

2. Heating red mercuric oxide HgO.

.....

3. The human body expose to a large dosage of nuclear radiation for a short time

.....

4. Putting a piece of magnesium in copper sulphate solution.

.....

5. Ammeter and voltmeter readings used in verifying Ohm's law if the resistance is burnt.

.....

6. Add a small piece of sodium metal to water.

.....

7. Increase in the concentration of the reactants. (According to the speed of the chemical reaction).

.....

8. When the radiation affects on the human body cellular effects.

.....

9. When the individual carries a recessive gene from both parents

.....

10. The body cells can't use glucose sugar from the blood.

.....

11. Adding manganese dioxide to a test tube containing hydrogen peroxide.

.....

12. Replacing a piece of iron with iron filings has the same mass on reacting with diluted acids.

.....

13. Heating green copper carbonate.

.....

14. Adding silver nitrate solution to sodium chloride solution.

.....

15. Pancreas stopped secreting glucagon hormone.

.....

16. Two charged conductors connected with each other one of them has higher electric potential from the other.

.....

17. Mating between two pure individuals differ in two pairs or more of contrasting traits.

.....

18. Cross-pollination between two pure pea plants, one with yellow pod and the other with green pod.

.....

19. When the gene fails to produce its own enzyme.

.....

20. To the number of collisions when adding a negative catalyst to a chemical reaction.

.....

21. To the colour of red mercuric oxide when it is heated.

.....

22. Adding hydrochloric acid to sodium carbonate salt. (Without writing equation).

.....

23. Touching two conductors (A) and (B) where the electric potential of conductor (A) is higher than the electric potential of conductor (B).

.....

24. Changing the chemical composition of hemoglobin.

.....

25. Mating between two pure individuals which are different in a pair of contrasting traits.

.....

26. When iodine salts decrease in water and food of man.

.....

27. The atom's nucleus of an element contains a number of neutrons more than the number required for its stability.

.....

28. Increasing surface area according to the reactants.

.....

29. Exposure of red blood cells which contain hemoglobin to the nuclear radiation.

.....

30. Decreasing the activity of pituitary gland in the body

.....

31. Human body is exposed to a large dosage of radiation for a short time.

.....

32. Putting two effervescent tablets in two similar beakers, one of them contains cold water and the other contains hot w ter.

.....

33. Touching two charged co s by a conducting bar, the first conductor has an electric potential is equa ctric potential of the second one.

.....

34. The length of the sliding rheostat wire increase in circuit "to the electric current intensity".

.....

35. Heating blue copper hydroxide.

.....

36. Pancreas does not secrete glucagon hormone.

.....

37. Adding a negative catalyst to rapid reaction.

.....

38. Heating of sodium nitrate.

.....

39. If the length of the rheostat wire increases (Related to the electric current intensity).

.....

40. A substance gains an electron or more during a chemical reaction.

.....

41. The stigma of the flower of pea plant uncovered during the study of the inherited traits .

.....

42. Two conductors having the same electric potential are connected together by a wire.

.....

43. The atom nucleus of an element contains a number of neutrons more than the number required for its stability.

.....

44. You keep food outside the refrigerator for a long time.

.....

45. Two charged conductors touch and the electric potential of one conductor is 10 volt but the electric potential of the other conductor is 30 volt.

.....

46. Two pure individuals bearing two pairs of contrasting traits are crossed.

.....

47. When the dominant gene exists with another for the same characteristic.

.....

48. the number of collisions when the temperature of the reaction is raised up.

.....

49. When manganese dioxide (Mn[illegible]) is added to [illegible] peroxide.

.....

50. If there is a mating between two [illegible] individuals resulting in [illegible] individuals and 50% recessive individuals.

.....

✸(10) Define :

1. The principle of complete dominance.
2. Mendel's first law.
3. Thyroxin hormone.
4. Adrenalin hormone.
5. Ohm's law.
6. Neutralization reaction.
7. Chemical reaction.
8. The series of chemical activity
9. Radioactivity
10. Genes.
11. Hormones.
12. The ampere.
13. Catalyst.
14. Mendel's second law.
15. The electric potential of c... r.
16. The human genome.

✸(8) Problems

1

If the work done to transfer an electric charge of 300 coulomb between two points is 66000 joules, Calculate the potential difference between the two points.

.....

.....

.....

2

Battery consists of three similar cells, the electromotive force of each cell is 1.5 volt. Calculate the total electromotive force of the cells, when they are connected in :

1. series. **2. parallel.** (write the used law in each case)

.....

.....

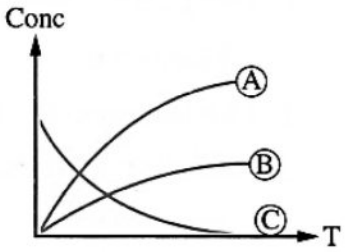
.....

3

$$2NaNO_3 \xrightarrow{\Delta} 2NaNO_2 + O_2$$

From the chemical equation and the opposite graph mention which curve represents the concentration of each :

1. Sodium nitrate.
2. Oxygen gas.
3. Sodium nitrite.



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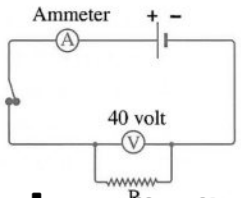
4

In the opposite figure :

Calculate the current intensity passing, If the work done to transfer the electric change is 240 joule and the time of flowing is 2 second.



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5

You have 4 similar electric cells, the electromotive force of each one is 1.5 volt, illustrate by drawing only how you connect them to get batteries of e.m.f of 3 volt in two ways.

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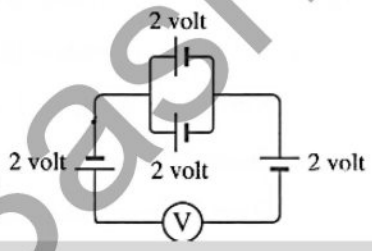
6

From the opposite diagram :

1. The voltmeter reading = ... volt.
2. If connect all electric cells in series, the reading of voltmeter is ..... volt.



7

In the following reaction : $2Na + Cl_2 \longrightarrow 2NaCl$

Write the meant by each of the following :

1. Oxidation process.
2. Reduction process.
3. Oxidizing agent.
4. Reducting agent.

.....

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.....

.....

8

From the opposite reaction :

① $\boxed{A} \xrightarrow{\Delta} H_2O + CuO$

② $2Na + 2H_2O \longrightarrow 2NaOH + \boxed{B} + heat$

③ $CuO + \boxed{B} \xrightarrow{\Delta} H_2O + \boxed{C}$

1. Write chemical formula for $\boxed{A}$ $\boxed{B}$ $\boxed{C}$
2. What is the type of reaction in ①, ②, ③
3. What is the name of chemical process which appears to black copper oxide in reaction ③ ?

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9

If crossing takes place between two pea plants, one is pure white flowers, and the other is pure red flower, explain on genetic bases the result of the crossing of the first generation only, not that the red gene color is symbolized by (R) and the white gene color is symbolized by (r).

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10

From the following two equations answer the following :

① $2(A) + 2Na \longrightarrow 2NaOH + (B) + heat$

② $(B) + CuO \xrightarrow{\Delta} Cu + (A)$

1. Write the chemical formula for the (A) & (B) substances.
2. How to detect the substance (B) ?
3. What is the type of reaction No. ①, and what is the type of reaction No. ② ?

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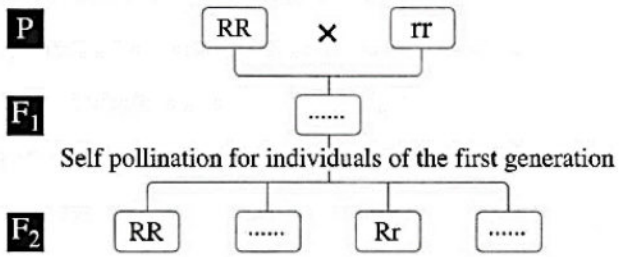
.....

11

The opposite figure illustrates a cross-pollination :
between a pea plant with red flowers
and another pea plant with white flowers :

1. Determine by symbols the individuals of the first generation.
2. Fill in gabs the second generation.
3. Is the results verify Mendel's first law ? State your reason.



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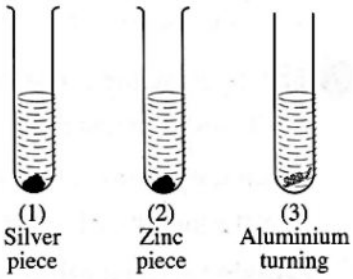
12

On adding suitable equal amounts of diluted hydrochloric acid to each of the represented tubes (1, 2, 3) in the figure, explain the following :



1. Non occurrence of reaction in tube (1).
2. Delaying the beginning of the reaction in tube (3) than tube (2) although aluminium is more active then zinc.
3. What happen to the rate of the reaction when zinc piece in tube (2) converted into small pieces or zinc powder, and why?
4. What is the name of gas evolves during reaction ?

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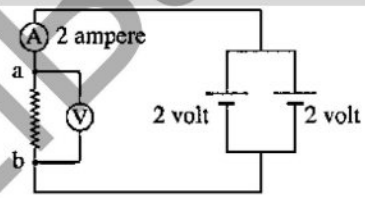
.....

.....

13

From the opposite circuit, find the work done required to transfer a quantity of electric charge between points (a) and (b) through 5 minutes if the electromotive force of each cell is two volt and the reading of ammeter is two ampere.



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14

The hybridization in the Drosophila between a male and a female, both of them are long wings and the product is 27 members with long wings and 9 members with short wings. Explain that on genetic bases (If the long wing is T and short wing is t .

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15

Resistive electrical conductor of 1100 ohms connected to a voltage source of 110 volt, Calculate the amount of electric [illegible] passing by 10 minutes.

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16

You have three identical electric cells and the e.m.f. of each is 1.5 volts , illustrate by drawing only how you can connect them to get a battery of e.m.f. equals:

1. (4.5) volts 2. (3) volts

.....

.....

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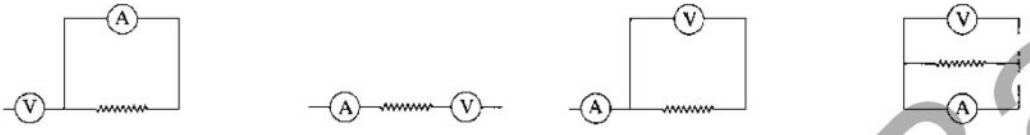
17

Which one of the following figures represents a part of an electric circuit that contains an ammeter and a voltmeter connected in right way ?



(a) (b) (c) (d)

.....

18

Choose from column (B) and (C) what suit with column (A) then write the complete statement.

(A) Reaction occurs	(B) Gas produced	(C) How can you detect the produced gas ?
1. Sodium carbonate with diluted hydrochloric acid.	(1) H_2	a. Increases the glowing of the match stick.
2. Sodium with water.	(2) O_2	b. Turbid clear limewater.
3. Heating sodium nitrate.	(3) SO_3	c. Burning with a pop sound.
	(4) CO_2	d. Form white fumes with ammonia.

.....

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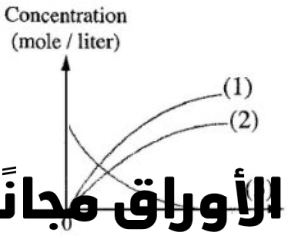
19

The opposite graph represents the rate of rapid decomposition of the substance of sodium azid. (which is present inside the air bag)



$2NaN_3 \xrightarrow{\text{Electric spark}} 2Na + ...$

1. Complete the equation.
2. From the graph, write the name ... ound indicated by each number.
3. Mention the importance of air...

.....

.....

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20

If the potential difference between the terminals of a conductor is (6) volts, and the electric current of intensity (0.5) ampere is passed through it, Calculate the intensity of the electric current passing through this conductor if it is connected with a voltage source of (12) volt

.....

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.....

21

Use the following symbols (TtAa) and (ttaa) to express the results from the pollination between hybrid long-stemmed, red flower pea plant with another pure short-stemmed, white flower pea plant showing (parents, gametes and first generation).

.....

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22

Calculate the work done to transfer an electric charge of (20 coulomb) through cross section of a conductor, if the potential difference between its terminals is (50 Volt).

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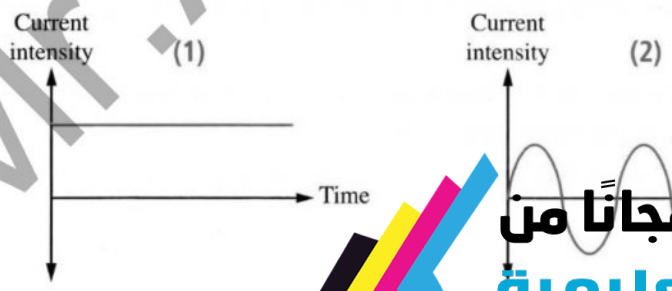
23

Study the following two figure (1) and (2), then complete the spaces by suitable words :

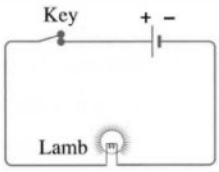


1. Figure (1) represents ..... ele... hat produced from ..... which changes ..... energy into electric energy.

2. Figure (2) represents ..... electric current the produced by ..... which changes ..... energy into electric energy.

24

The given figure represent electric lamb its filament can't carry current more than (1.5 ampere).
When the circuit closed a charge of (42) coulomb pass through its filament in half minute.
Explain by calculation if its filament burn or not ? and Why ?



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25

From the following table choose a statement from column (B) and another one from column (C) to be suitable for the items in column (A) and write a complete statement.

(A)	(B)	(C) Type of reaction
1. $NaNO_3$ 2. Al	a. decomposed by heat b. replace the hydrogen in water c. is formed in the form of white precipitate d. replace the hydrogen of the acid after a while.	e. Salt is formed and hydrogen gas evolves. f. When it reacts with silver chloride. g. Produce yellowish white substance and oxygen. h. Oxide is formed and oxygen evolves.

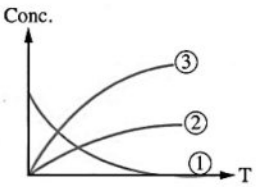
.....

.....

26

The opposite graph represents the breaking up of N_2O_5 with time :

1. Write the balanced symbolic equation of this reaction.
2. Replace the numbers on the figure by suitable substances from the equation.



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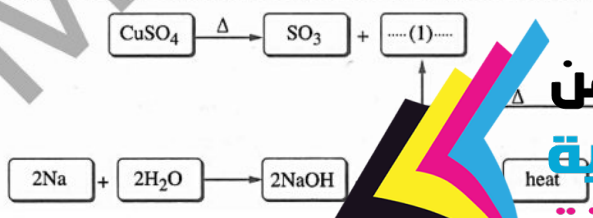
27

Study the chemical reactions in the following diagram, then answer :
Write the chemical formula for the chemical materials labeled from (1) to (3).



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28

From the reaction : $2NaOH + CuSO_4 \longrightarrow$ salt + precipitate

Answer the following :

1. Mention the name of the salt.
2. How can you measure the speed of reaction practically ?
3. What happens to the precipitate if heated strongly ?
   (Write the equation of the reaction).

.....

.....

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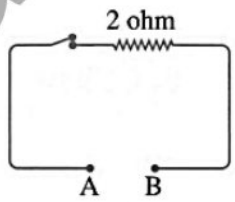
29

If you have four similar electric cells :

The e.m.f of each cell is 2 volt.

Show by drawing the method of their connection between the two points (A) and (B) in the opposite figure to obtain current of intensity 3 ampere.



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30

Calculate : Current intensity due to the flow 6000 coulombs through across of a conductor in 5 minutes.

.....

.....

.....

.....

31

Amr placed a piece of zinc in a dilute hydrochloric acid solution, with the formation of gas bubbles around the piece of zinc :

1. What is the name of the evolving gas?
2. What is the type of reaction
3. What happens in the case of replacing the piece of zinc with a piece of copper ?

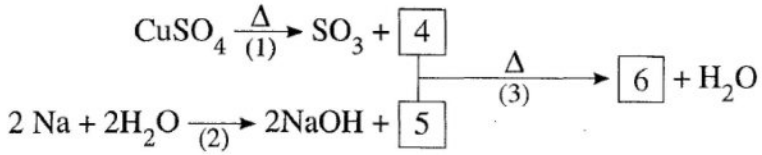
.....

.....

.....

32

Study the chemical reactions, in the following diagram then answer the following question :



First : Mention the type of chemical reactions : 1 , 2 , 3

Second : Write the chemical formula for : 4 , 5 , 6

.....

.....

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33

A pea plant with hybrid yellow seeds has been crossed over with a plant of green seeds. Explain on genetic bases the genotype of the parents, the gametes and the first generation individuals.

.....

.....

.....

.....

34

Use symbols R,r to express the results produced from crossing between:
A pea plant with white flowers and another one with pure red flowers.

.....

.....

.....

35

From the following reaction and equation :

$Mg + 2HCl \longrightarrow MgCl_2 + H_2\uparrow$

Explain :

1. The oxidation and reduction processes.
2. Determine the oxidizing agent and the reducing agent in the reaction.

.....

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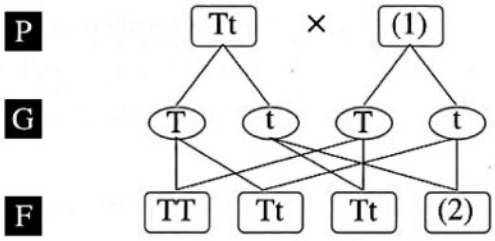
36

The following figure represents a self pollination in pea plant with hybrid tall stem – replaces the digits (1) and (2) by suitable letters.



37

From the opposite figure :

1. What is the name of this device ? And what is used ?

2. Write down the numbers (1) and (2).

.....

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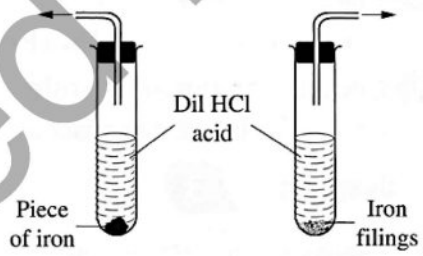
38

From the two opposite figures :

1. Express this reaction with a balanced symbolic chemical equation.
2. What is the factor that affects the speed of this reaction ?
3. What happens on replacing iron by copper ?



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39

In the reaction :

$$\text{Iron} + \text{Hydrochloric acid} \xrightarrow{\text{dil.}} \text{Salt} + \text{Hydrogen gas}$$

1. Write the chemical formula of the produced salt.
2. What happens when replacing a piece of iron with iron filings has the same mass related to the rate (speed) of the previous chemical reaction ?

.....

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40

From the following reaction :

$$2\,Na + Cl_2 \longrightarrow 2\,NaCl$$

Explain oxidation and reduction processes

{if you know that the atomic number of Na is (11) and Cl is (17)}

.....

.....

.....

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41

$$H_2 + CuO \xrightarrow{\Delta} Cu + H_2O$$

in this reaction determine the oxidizing agent and reducing agent.

.....

.....

.....

42

The following figure represents the process of pollination in a pea plant of hybrid tall stem.

1. Write what is indicated by the numbers (1) , (2) and (3) by suitable symbols in your answer paper.
2. Define the law of segregation.

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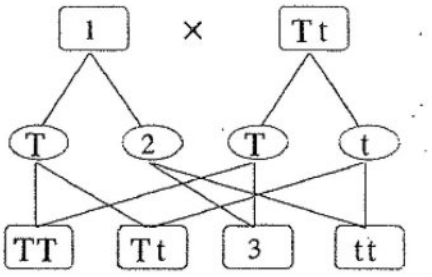

43

The potential difference between two ends of a conductor is (6 volt) and the electric current intensity passing in the conductor is (0.5 ampere). What is the electric current intensity passing in the conductor if it is connected by electric source. its electric potential is (12 volt) ?

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Model Answer

(1) Write the scientific term:

1. Direct current
2. Endocrine glands
3. Dominant traits
4. Electric current
5. Reduction process
6. Rheostat
7. Electric resistance
8. Speed of chemical reaction
9. Hormone
10. Electric intensity
11. Oxidase enzyme
12. Catalytic converter
13. Coulomb
14. Catalyst
15. Enzyme
16. Sievert
17. Chemical reaction
18. the potential difference across two terminals of a conductor .
19. Acquired traits.
20. Neutralization reaction
21. Ohm
22. Target cell
23. Dwarfism
24. Recessive traits
25. Pure individual
26. Genetics
27. Testosterone
28. Electric potential of conductor
29. Chemical activity series
30. Electromotive force
31. Growth hormone
32. Hybrid individual
33. Endocrine gland
34. Electric current
35. Simple substitution reaction
36. The principle of complete dominance
37. Hormone
38. Exophthalmic goiter
39. Genes
40. Oxidation
41. Gametes
42. Positive catalytic reaction
43. Double substitution reaction
44. Reducing agent
45. Thermal decomposition reaction
46. Radioactivity phenomenon
47. Alternating electric current
48. Hormone disorder
49. Salt and water
50. Estrogen hormone
51. Oxidation process
52. Dominant traits
53. Voltmeter

(2) Choose the right answer:

1.	A	9.	C	17.	C	25.	A	33.	B	41.	C	49.	C	57.	C	65.	C	73.	B	81.	B	89.	C
2.	B	10.	A	18.	C	26.	B	34.	B	42.	C	50.	B	58.	A	66.	A	74.	C	82.	D	90.	A
3.	B	11.	C	19.	D	27.	C	35.	D	43.	D	51.	D	59.	B	67.	D	75.	D	83.	B	91.	B
4.	C	12.	D	20.	B	28.	B	36.	B	44.	B	52.	D	60.	A	68.	C	76.	B	84.	A		
5.	A	13.	A	21.	A	29.	B	37.	B	45.	D	53.	C	61.	C	69.	A	77.	C	85.	A		
6.	A	14.	C	22.	B	30.	C	38.	A	46.	D	54.	C	62.	C	70.	B	78.	C	86.	A		
7.	B	15.	B	23.	B	31.	B	39.	C	47.	A	55.	B	63.	C	71.	C	79.	D	87.	D		
8.	B	16.	C	24.	B	32.	B	40.	C	48.	D	56.	A	64.	D	72.	B	80.	B	88.	D		

(3) Complete the following :

1. $ZnCl_2 + H_2$
2. Dominant – recessive
3. Planted
4. Growth
5. Genetic
6. Recessive
7. Voltmeter – volt
8. Genes – nucleotides
9. Direct – alternating
10. Thermal decomposition – simple substitution
11. Direct – alternating
12. Self – cross
13. Voltmeter
14. HCl
15. Throxin – calcitonin
16. Complete dominance
17. Human genome
18. Molecules
19. Chromosome
20. Dwarfism
21. Gametes
22. Thyroxin
23. Sievert
24. Oxidase
25. Joule – coulomb
26. Salt – water
27. Decrease – increase
28. Ammeter – ohmmeter
29. Product
30. Adrenaline
31. 1.5
32. Thyroxin – thyroid
33. Radioactive – neutrons
34. Direct
35. Chemical reaction
36. Thermal decomposition
37. Genes
38. Parallel – series
39. Calcitonin – progesterone
40. Chlorine – sodium
41. Hereditary – acquired
42. Voltmeter
43. DNA – Protein
44. Hydrogen – SO3
45. Natural – artificial
46. Directly
47. Ohmmeter – ohm
48. Two hereditary factors – gametes
49. NO2 – O2
50. Mechanical – Electric
51. Slower
52. Gigantism
53. Hereditary
54. Breaking – formation
55. Sulphate – metal oxide
56. Voltmeter – volt
57. Red
58. Insulin
59. Glucagon
60. Potential difference
61. Estrogen
62. Acquired
63. Dry cell
64. Dry
65. Salt – water
66. Reactant – product
67. 1 Ohm
68. Clear lime water
69. 100 %
70. Mendel
71. Voltmeter
72. Hydrogen
73. Gametes
74. Complete dominance
75. Iron rust
76. Genome

(4) Correct the underlined words:

1. Carbon dioxide
2. Faster
3. Progesterone
4. Sievert
5. Variable
6. Reduction
7. Negative catalyst
8. Free
9. Chemical
10. Stamen
11. Hereditary
12. Chromosome
13. Voltmeter
14. Adrenalin
15. Petroleum oil
16. Seven
17. Equal
18. Faster
19. Growth
20. Volt
21. Fireworks
22. Kinetic
23. Oxyge
24. Endocrine
25. Thyroxin
26. Slow
27. Metal oxide
28. Petroleum oil
29. Electric potential of conductor
30. Glucagon
31. [illegible]
32. Oxygen
33. Pancreas
34. [illegible]
35. White
36. [illegible]
37. Red
38. Becquerel
39. Reactant
40. Dry cell
41. Gene
42. Neutrons
43. Insulin
44. Parallel
45. [illegible]
46. Calcitonin
47. Genes
48. [illegible]
49. Silver chloride
50. [illegible]
51. Badel and Tatum
52. Increase
53. Gigantism
54. Protein
55. Carbon dioxide
56. Iodine
57. Agricultural
58. [illegible]
59. Watson and crick
60. Electrons
61. Coulomb

✹(5) Give reason for:

1. Due to the decrease in the secretion of thyroxin hormone as a result of the lack of iodine from food as it enters in the hormone's structure.
2. Because zinc come before hydrogen in the chemical activity series, so they replace the hydrogen of acid, while copper comes after hydrogen in the chemical activity series, so it can't replace the hydrogen of acid.
   $Zn + 2HCl \xrightarrow{dil.} ZnCl_2 + H_2\uparrow$
3. Because by increasing the number of reactants molecules, the number of probable collisions between them increases, so the speed of reaction increases.
4. Because magnesium comes before copper in the chemical activity series, so it replaces copper in copper sulphate solution and copper precipitates as a red ppt.
   $Mg + CuSO_4 \longrightarrow MgSO_4 + Cu\downarrow$
5. To prevent cross pollination with other flowers.
6. Because :
   - It is easy to be planted and it grows fast.
   - Its life cycle is short.
   - Its flowers are hermaphrodite, so it can be self-pollinated.
   - It can easily be artificially pollinated (human intervention).
   - It produces large numbers of plants in a generation.
7. Because it's acquired trait that can't be transmitted from a generation to another.
8. Because the oxidase enzyme in sweet potato acts as a catalyst which increases the rate of decomposition of hydrogen peroxide into water and oxygen gas.
9. Due to formation of silver chloride salt which doesn't dissolve in water.
   $NaCl + AgNO_3 \longrightarrow NaNO_3 + AgCl\downarrow$
10. Because the target cells that are affected by hormone are located faraway from endocrine glands, so blood is the only way for the hormones to reach them.
11. To reduce the electric potential of the current used and get a suitable electric potential to charge the mobile.
12. Because the reactions of ionic compounds take place between ions, while the reactions of covalent compounds take place between molecules.
13. **Because** copper comes after hydrogen in the chemical activity series, so it can't replace the hydrogen of acid.
14. Because the low temperature in the fridge slows down the speed of the chemical reactions done by bacteria which cause the rot of food.
15. Because the reactions of ionic compounds take place between ions, while the reactions of covalent compounds take place between molecules.
16. Because the pancreas secretes the insulin hormone and the glucagon hormone and the function of each hormone contradicts the function of the other hormone.
17. Because sodium atom loses an electron and changes into positive (+ve) ion, while chlorine atom gains an electron and changes into negative (-ve) ion.
18. Because the gene of the ability to roll the tongue dominates over the gene of the non-ability to roll the tongue if they are both present together in an individual.
19. Because radiation causes changes in the sex chromosomes composition for living organisms.
20. Because the gene of the free ear lobe dominates over the gene of the attached ear lobe if they are both present together in an individual.
21. To control the electric current intensity passing through the circuit and the potential difference in the different parts of the circuit.
22. Because it secretes hormones that regulate the activities of most of other endocrine glands.
23. Because they release unseen rays spontaneous a[illegible] a result of their atoms' nuclei containing neutrons more than required for their stabilization.
24. Because the target cells that are affe[illegible]ormone are located faraway from endocrine glands, so blood is the only way for the hormones to reach the[illegible]
25. Due to the increase in the secreti[illegible]wth hormone at childhood.
26. Due to increasing the speed of [illegible]n by increasing the concentration of oxygen gas.
27. To insure that the plant doesn't be self-poll[illegible]d.
28. Because :
   - It can be transferred for long distances through wires.
   - It can be changed into a direct current.

29. Because the low temperature in the fridge slows down the speed of the chemical reactions done by bacteria which cause the rot of food.
30. To control the electric current intensity passing through the circuit and the potential difference in the different parts of the circuit.
31. Because the surface area in case of iron filings is larger than that in case of iron block and the speed of chemical reactions increases by increasing the surface area.
32. Because aluminium comes before hydrogen in C.A.S., so it replaces hydrogen of diluted acids.
$2Al + 6HCl \xrightarrow{dil.} 2AlCl_3 + 3H_2\uparrow$
33. Because by increasing the temperature, the number of probable collisions between reactants molecules increases, so the speed of reaction increases.
34. Because the green pod trait dominates over the yellow pod trait in the pea plant according to the principle of complete dominance.
35. Because rice doesn't contain pro-vitamin (A) known as carotene which is converted into vitamin (A) inside the body.
36. Due to the presence of a layer of aluminium oxide (Al_2O_3) on aluminium surface, which takes time to separate from aluminium, which delays the starting of occurrence of the reaction.
37. To obtain a battery, the e.m.f. of it is high.
38. To measure the potential difference across the two terminals of the conductor.

(6) What happen if:

1. The body stops growing, so the person becomes a dwarf.
2. A silvery precipitate of mercury is formed and oxygen gas evolves.
$2HgO \xrightarrow{\Delta} 2Hg + O_2\uparrow$
3. This leads to the damage of bone marrow, spleen , digestive system and the central nervous system.
4. The blue color of copper sulphate disappears and a red precipitate of copper is formed.
$Mg + CuSO_4 \longrightarrow MgSO_4 + Cu\downarrow$
5. The ammeter reading becomes zero and the voltmeter reading becomes the e .m.f. of the battery.
6. A reaction take place and hydrogen gas evolves
$2Na + 2H_2O \longrightarrow 2NaOH + H_2\uparrow + heat$
7. The speed of the chemical reaction increases, due to the increase in the number of probable collisions between reactant molecules.
8. Leads to change in the cells composition which lead to destroy the cell s, and also the chemical composition of the haemoglobin changes, it becomes incapable of carrying oxygen.
9. The individual will show the recessive trait.
10. The person will be diabetic
11. Hydrogen peroxide decomposes (breaks up) rapidly into water and oxygen gas evolves.
12. The speed of the chemical reaction decreases.
13. A black substance of copper oxide is formed, and carbon dioxide gas evolves.
$CuCO_3 \xrightarrow{\Delta} CuO + CO_2\uparrow$
14. A white precipitate of silver chloride is formed.
$NaCl + AgNO_3 \longrightarrow NaNO_3 + AgCl\downarrow$
15. The glucose blood level decreases.
16. The electric current will passes from the conductor of high electric potential to that of low electric potential.
17. the first generation will be 100% dominant trait and the second generation will be 75% dominant trait : 25 % recessive trait (for each contrasting trait independently) .
18. All the produced pea plants are hybrid green pods.
19. The chemical reaction which producing the protein that is responsible for appearance of genetic trait not occurs , and so the genetic trait not appear.
20. The number of collisions decreases .
21. The silvery colour of liquid mercu[illegible] formed.
22. An effervescence occurs due to [illegible] bubbles of carbon dioxide gas.
$Na_2CO_3 + 2HCl \xrightarrow{dil.} 2NaCl$ [illegible]
23. An electric current will passes from con[illegible] (A) to conductor (B), and stops when the electric potential of both conductors (A) and (B) becomes equal.
24. It can't be able to carry oxygen, and that is from the cellular effects of the nuclear radiation.
25. All the resulting individuals are carrying the dominant trait.

26. This leads to decreasing in secretion of thyroxin hormone and this leads to that the human suffers from simple goiter.
27. Spontaneous decay to reach more stable composition.
28. The speed of chemical reaction increases.
29. The chemical structure of hemoglobin changed and can't be able to carry oxygen.
30. Hormonal disorders for most of the others endocrine glands secretion.
31. damage of bone marrow which is responsible for the formation of red blood cells.
32. An effervescence happens and the effervescence occurred in case of hot water is faster than in case of cold water.
33. No electric current will pass through the conducting bar.
34. The electric current intensity decreases.
35. A black substance of copper oxide is formed, and water vapour evolves.
$Cu(OH)_2 \xrightarrow{\Delta} CuO + H_2O\uparrow$
36. The glucose blood level decreases.
37. The speed of the reaction will be decreased.
38. A yellowish white substance of sodium nitrite is formed and oxygen gas evolves.
$2NaNO_3 \xrightarrow{\Delta} 2NaNO_2 + O_2\uparrow$
39. The resistance increases and the current intensity decreases.
40. It will be reduced and changed into a negative ion and it became an oxidizing agent.
41. Cross-pollination with other flowers will occur.
42. No electric current flows, because there is no potential difference.
43. Its energy increases , so it emits unseen (invisible) radiations to reach a more stable composition
44. Food becomes rotten due to increasing chemical reactions done by bacteria.
45. The electric charges transfer from the second conductor to the first conductor until their electric potential becomes equal.
46. The trait of each pair is inherited independently and all individuals of the first generation appear carrying the dominant traits only and in the second generation , the dominant trait and the recessive trait appear at a ratio of 3 : 1
47. The dominant trait appears.
48. Increasing the number of collisions by increasing the temperature
49. The rate of decomposition of hydrogen peroxide increases.
50. The dominant individuals are hybrid .

✸(10) Define:

1. It is the appearance of a dominant hereditary trait in the individuals of the first generation when two individuals are crossed, one of them carries a pure trait contrasting the trait carried by the other individual.
2. When two pure individuals of any one pair of hereditary traits are different from each other, only the dominant trait appears in the first generation, while the two traits appear in the second generation at a ratio of 3 (dominant trait) : 1 (recessive trait).
3. It plays a main role in food assimilation processes in the body, where it liberates the energy necessary for the human body from food.
4. It stimulates body's organs to respond to emergencies
5. The electric current intensity passing through a conductor is directly proportional to the potential difference across it at a constant temperature
6. It is a reaction between an acid and an alkali to form salt and water.
7. It is the breaking up of bonds in molecules of the reactants and formation of new bonds in the molecules of resultants (products) from the reaction.
8. It is the arrangement of metals in a descending order according to the degree of their chemical activity.
9. It is the spontaneous decay of the atoms' nuclei of radioactive elements that are present in nature in an attempt to achieve a more stable composition.
10. They are parts of DNA present on the chromosomes and they are responsible for appearing the individual's hereditary traits.
11. It is a chemical substance (or a chemical message) ... controls and organizes most of the vital activities and functions in the bodies of living organisms.
12. It is the electric current intensity passing ... a circuit when a charge of one coulomb passes through a given cross-section in one second.
13. It is a substance which changes the ... cal reaction without changing or being used up.
14. When two pure different individuals bearing ... s or pieces of alternative (contrasting) traits are crossed, the trait of each pair is inherited independently of the others and appears in the second generation at a ratio of 3 (dominant trait) : 1 (recessive trait).
15. It is the condition (state) of an electric conductor that shows the transfer of the electricity from or to it when it is connected to another conductor.
16. It is a genetic map that shows the complete set of genes present on the human chromosomes.

✸(8) Problems

1

$$P = \frac{W}{q} = \frac{66000}{300} = 220 \text{ volt.}$$

2

1. e.m.f. of the battery = e.m.f. of one cell X no. of cells = 1.5 × 3 = 4.5 volt
2. e.m.f. of the battery = e.m.f. of one cell = 1.5 volt

3

1. Curve **(C)** 2. Curve **(B)** 3. Curve **(A)**

4

$$\because q = \frac{W}{V}$$

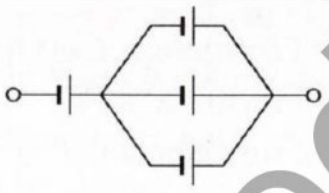
$$\therefore q = \frac{240}{40} = 6 \text{ coulomb}$$

$$\because I = \frac{q}{t}$$

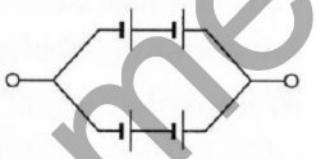
$$\therefore I = \frac{6}{2} = 3 \text{ ampere}$$

5

First way :



Second way :



6

1. 6 2. 8

7

1. a 2. c 3. c 4. c

8

1. (A) chemical formula is $Cu(OH)_2$
   (B) chemical formula is H_2
   (C) chemical formula is Cu
2. Reaction (1) is thermal decomposition reaction.
   Reaction (2) is simple substitution reaction.
   Reaction (3) in oxidation and reduction reaction.
3. Reduction process.

9

P: RR × R

G: R

F: Rr

Ratio: 100 % red flowers

10

1. (A) is H_2O (B) is $H_2\uparrow$
2. In general , we detect H_2 gas by approching a burning match to it, so it burns with a pop sound.
3. Reaction No. (1) is simple substitution reaction.
   Reaction No. (2) is oxidation and reduction reaction.

11

1. Rr 2. Rr – rr
3. Yes, because the dominant trait appear in individuals of first generation at a ratio of 100% and in the second generation at a ratio of 3 (dominant trait) : 1 (recessive trait).

12

1. Because silver comes after hydrogen in C.A.S.
2. Due to the presence of aluminium oxide layer, which take time till separates and then the metal becomes exposed to the acid.
3. The speed of the chemical reaction increases, due to the increase in the surface area of the reactant.
4. Hydrogen gas.

13

$q = I \times t = 2 \times 5 \times 60 = 600$ coulomb

work done $(W) = V \times q = 2 \times 600 = 1200$ joule

14

P: Tt × Tt

G: T t T t

F: TT Tt Tt tt

27 members with long wings : 9 members with short wings

15

$$\because I = \frac{V}{R}$$

$$\therefore I = \frac{110}{1100} = 0.1 \text{ ampere}$$

$$\because q = I \times t$$

$$\therefore q = 0.1 \times 600 = 60 \text{ coulomb}$$

16

1.

2.

17 Figure (c).

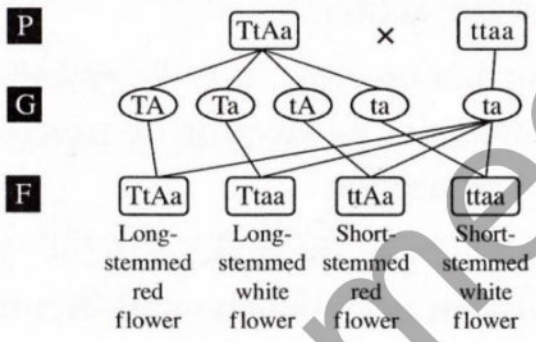
18
1. Sodium carbonate with diluted Hydrochloric acid, produce CO_2 gas which turbid clear limewater.
2. Sodium with water, produce H_2 gas which burning with a pop sound.

19
1. $3\ N_2$
2. (1) Nitrogen gas ($3N_2$)
   (2) Sodium ($2N_2$)
   (3) Sodium azid ($2\ Na\ N_3$)
3. It is one of the most important safety means of car, where it inflated by nitrogen gas at an extreme speed on the occurrence of car accident.

20
$\because R = \frac{V}{I}$ $\therefore R = \frac{6}{0.5} = 12$ ohm

$\because I = \frac{V}{R}$ $\therefore I = \frac{12}{12} = 1$ ampere

21



22 $W = v \times q = 50 \times 20 = 1000$ Joule

23
1. direct – dry cell – chemical.
2. alternating – dynamoc – mechanical.

24 $I = \frac{q}{t} = \frac{42}{30} = 1.4$ ampere

$\therefore$ The filament of the electric lamb doesn't burn, because the electric current intensity passing through it (1.4 ampere) is less than that (1.5 ampere) which it can sustain.

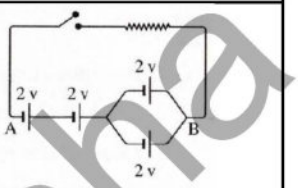
25
1. $NaNO_3$ decomposed by heat, produce yellowish white substance and oxygen.
2. Al replace the hydrogen of the ac… a while, salt is formed and hyd… evolves.

26
1. $2N_2O_5 \longrightarrow 4NO_2$
2. The graph (1) is N_2O_5
   The graph (2) is O_2
   The graph (3) is NO_2

27 1. CuO 2. Cu 3. $H_2\uparrow$

28
1. Sodium sulphate (Na_2SO_4).
2. By the disappearance rate of blue copper sulphate solution, or the appearance rate of blue copper hydroxide precipitate.
3. $Cu(OH)_2 \xrightarrow{\Delta} CuO\downarrow + H_2O$
   copper hydroxide (blue colour) → copper oxide (black colour)

29
$\because V = R \times I$
$\therefore V = 2 \times 3 = 6$ volt
So the connection of four electric cells as in the opposite figure.
their total e.m.f = 2 + 2 + 2 = 6 volt

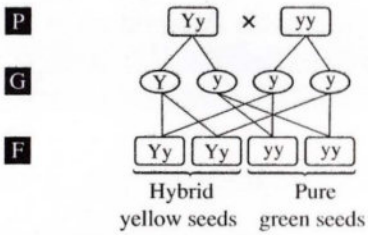


30
$\because I = \frac{q}{t}$
$\therefore = \frac{6000}{5 \times 60} = 20$ ampere

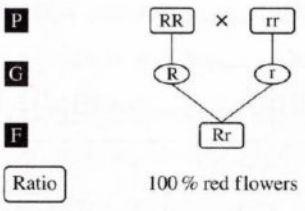
31
1. Hydrogen gas.
2. Simple substitution reaction. 3. No reaction.

32
1. **First :**
   (1) Thermal decomposition reaction.
   (2) Simple substitution reaction.
   (3) Oxidation and reduction reaction.
   Second :
   (4) CuO (copper oxide).
   (5) H_2 (Hydrogen gas).
   (6) Cu (copper).

33



34



35
1. The oxidation process :
   When (Mg loses two electrons, and converted i… ion.
   the reduction process :
   when (2Cl) gain two electrons, and converted into a negative ion.
2. The oxidizing agent : chlorine atoms.
   , the reducing agent : magnesium atom.

36 1. Tt 2. tt

37
1. The rheostat, it used to control the electric current intensity flowing through the circuit and the potential difference in the different parts of the circuit.
2. (1) slider 3. cepper bar

38
1. $Fe + 2HCl \longrightarrow FeCl_2 + H_2\uparrow$
2. The surface area of the reactant.
3. No reaction ocurs.

39
1. $FeCl_2$
2. The speed of the chemical reaction increases.

40 Sodium atom is oxidized because it loses an electron, while chlorine atom is reduced because it gains an electron which lost from Sodium atom.

	K	L	M
Na	2	8	1
Cl	2	8	7

41
- Oxidizing agent is CuO because it loses oxygen and reduced to copper.
- Reducing agent is H_2 because it gains oxygen and oxidized to water.

42 (1) Tt (2) t (3) Tt

43
$$R = \frac{V_1}{I_1} = \frac{6}{0.5} = 12 \text{ ohm.}$$

$$I_2 = \frac{V_2}{R} = \frac{12}{12} = 1 \text{ ampere.}$$