



# Questions

## Unit (1)

### (1) Complete the following:

- 1) Nitrogen pentoxide breaks up into ..... and ..... gas.
- 2) At the beginning of the reaction, the concentration of reactants is .....
- 3) The speed of a chemical reaction can be measured practically by the rate of ..... of reactants or the rate of ..... of resultants.
- 4) The change in the concentration of reactants and resultants in a time unit is .....
- 5) The rate of chemical reaction depends on ....., ....., .....and .....
- 6) The reaction of contributing compounds is .....
- 7) The increase in concentration of reactants makes the chemical reaction .....
- 8) A substance which increases the chemical reaction without sharing in the reaction is .....
- 9)  $2\text{NaOH} + \text{CuSO}_4 \rightarrow \dots + \dots$
- 10)  $\text{Fe} + 2\text{HCl} \rightarrow \dots + \dots$
- 11)  $2\text{N}_2\text{O}_5 \rightarrow \dots + \dots$

### (2) Give reasons for:

- 1) The speed of chemical reaction increases when the amount of the reactants increases.
- 2) Food must be heated during its preparation.
- 3) Food goes rotten in summer days if it is not frozen.



**(3) How can you differentiate between:**

Sodium chloride solution and sodium hydroxide solution (by two different methods)

**(4) Mention the function of:**

1- refrigerator

2- Enzymes

**(5) Complete the following:**

1- ..... is the mixture that is homogenous in ..... and properties.

2- It is possible to dissolve more solute in the ..... solution.

3- An excess of the solute cannot be dissolved in ..... solution.

4- The amount of the solute in saturated solution is ..... than that in super-saturated solution.

5- The aqueous solution of an acid contains ..... ions, while that of a base contains ..... ions.

6- Acids change the ..... litmus paper into .....

7- Acids react with ..... to give ..... and water.

8- Most bases have ..... feel like .....

9- ..... acid is produced in human muscles during physical exercises.

10- Calcium carbonates is used in the manufacture of ..... and .....

11- Silve nitrates are used in the manufacture of sensitive .....

**(6) Mention one use for each:**

1- Hydrochloric acid

2- Magnesium hydroxide



**(7) Give reason for:**

- 1- Sodium and potassium minerals have a role in the human body.
- 2- The green leaves of vegetables have a great benefit.
- 3- The molten of coinage metals is considered as a type of solution.
- 4- The rheostat are used in the electric circuit.

**(8) Define:**

- Ohm's law

**(9) What's meant by:**

- A work of 10 joules is done to transfer a charge of 5 coulombs between two points.

**(10) Solve:** If the quantity of electricity of 12 coulombs passes through a cross-section of a conductor in 3 seconds, what is the intensity of the current passing through that conductor?



# Unit (2)

## (1) Complete:

- 1- The current intensity due to the flow of 2700 coulomb in 300 second through a cross-section of a conductor equals .....
- 2- In the electric circuits, the ammeter is connected in ....., while the voltmeter is connected in .....
- 3- Volt =  $\frac{\text{joule}}{\text{.....} \times \text{second}}$
- 4- There are two types of electric current which are ..... and .....
- 5- The ..... electric current can be transported only to short distance.
- 6- There are two methods of connecting electric cells which are ..... and .....
- 7- ....., ..... and cesium are natural radioactive elements.
- 8- Nuclear energy is used in medicine in ..... and ..... of some diseases.

## (2) Write the scientific terms:

- 1- The flow of electric negative charges in a conducting material (metal wire). (.....)
- 2- A device used to measure the electric current intensity. (.....)
- 3- The work done to transfer unit of electric charge between two ends of a conductor. (.....)
- 4- The opposition to the flow of electric current in the conductor. (.....)





- 7- In the simple cell the ..... energy is converted into electric energy.
- a) kinetic      b) magnetic      c) chemical      d) mechanical
- 8- In dynamo, ..... energy is converted into electric energy.
- a) magnetic      b) kinetic      c) chemical      d) light
- 9- Alternating current is used in .....
- a) electrolysis      b) lighting house  
c) electroplating      d) both a & c
- 10- Radioactive phenomenon was discovered by the scientist .....
- a) ohm      b) Becquerel      c) Ampere      d) volt
- 11- Rockets use ..... fuel for flying
- a) gasoline      b) kerosene      c) natural gas      d) nuclear
- 12- The measuring unit of the absorbed radiation is the .....
- a) curie      b) rem      c) Rontgen      d) ohm

**(4) Give reasons for:**

- 1- It is better to use alternating current rather than direct current.
- 2- The voltmeter is connected across the two poles of a battery.
- 3- Rheostat is used in some electric circuits.
- 4- Some cells are connected in electric circuit in series.
- 5- Some cells are connected in the electric circuit in parallel.
- 6- e.m.f. of battery whose cells are connected in series is greater than that connected in parallel.
- 7- Some elements are called radioactive elements.
- 8- Radiation has genetic effect.



### **(5) Problems:**

- 1- Calculate the electric current intensity that flows through cross section of a wire, if a charge of 10 coulombs passes through in 2 seconds.
- 2- Calculate the current intensity due to the flow of 5400 coulomb in 5 min. through a cross-section of a conductor.
- 3- What is the quantity of electricity which passes through a conductor its resistance 100 ohm for 30 minutes when the potential difference across its ends is 220 volts.
- 4- You have three similar cells, the electromotive force of each is 1.5 volt. Explain by using a diagram how you can connect them to obtain an e.m.f of:
  - a) 1.5 volts
  - b) 3 volts
  - c) 4.5 volts



## Unit (3, 4)

### (1) Complete:

- 1- ..... traits are not transmitted from one generation to another.
- 2- The scientist ..... is the founder of heredity, he used the seeds of ..... plant, because its flowers are ..... and thus it can self-pollinated.
- 3- The trait that appears in all individuals of the first generation in Mendel's experiments is ..... trait.
- 4- Chromosome is chemically composed of a nucleic acid called ..... which is combined with .....
- 5- The two scientists ..... and ..... were able to make a model for DNA molecule.
- 6- In DNA molecule, the nitrogenous base, Guanine pairs with ..... base.
- 7- The gene mutation occurs as a result of the change in the sequence of ..... of the gene.
- 8- Hormones are directly secreted into the blood stream by .....
- 9- ..... gland secretes ..... hormone which controls the general growth of the body.
- 10- Thyroxin is a ..... that regulates food assimilation in your body.





## (2) Write the scientific term:

- 1- The traits ready to be transmitted from one generation to another.  
(.....)
- 2- The trait that appears in all individuals of the first generation in Mendel's experiments.  
(.....)
- 3- The hereditary factors which transmit traits from the parents to off spring.  
(.....)
- 4- Through which the hereditary traits are transmitted from parents to offspring.  
(.....)
- 5- Parts of DNA that are present on the chromosomes and carry the hereditary traits of the individual.  
(.....)
- 6- It is chemically consisted of a nucleic acid called DNA combined with protein.  
(.....)
- 7- The mutations which are controlled by human to obtain desirable traits in specific living organisms and specially in the plants.  
(.....)
- 8- Organs secreting hormones in the human body.  
(.....)
- 9- A chemical message that controls and regulates the activities and functions of most of the body organs.  
(.....)
- 10- Hormone which stimulates the storage of glucose sugar level in the blood.  
(.....)
- 11- The result when one of the endocrine glands does not act properly.  
(.....)



**(3) Choose the correct answers:**

- 1- Mendel conducted his experiments in pea plant by using ..... pairs of traits.  
a) 5                      b) 7                      c) 9                      d) 11
- 3- The two factors of a hereditary trait are similar in the ..... individual.  
a) pure                      b) hybrid                      c) recessive                      d) a and c
- 4- Which one of these traits is recessive in humans .....  
a) curly hair                      b) wide eyes                      c) free ear lobe                      d) straight hair
- 5- ..... put the model of DNA molecule.  
a) ohm                      b) Mendel                      c) Watson                      d) Johansson
- 6- ..... is the part of DNA in the cell nucleus.  
a) Gene                      b) Gamete  
c) Cytoplasm                      d) no correct answer
- 7- DNA molecule consists of ..... strands.  
a) two                      b) three                      c) four                      d) five
- 8- The ..... mice don't have melnin pigment.  
a) grey                      b) white                      c) black                      d) brown
- 9- The hormone which regulates the level of calcium in the blood is the ..... hormone.  
a) calitonin                      b) thyroxin                      c) progesterone                      d) adrenalin
- 10- The ..... hormone liberates the needed energy from the food stuff.  
a) growth                      b) estrogen  
c) thyroxin                      d) testosterone
- 11- Glucagon hormone is secreted by .....  
a) pituitary gland                      b) thyroid gland  
c) adrenal gland                      d) pancreas



#### **(4) Give reasons for:**

- 1- Mendel selected (choose) the pea plant to conduct his experiments.
- 2- The curly hair dominates the smooth hair trait.
- 3- The ability of rolling the tongue is dominant trait in the human being.
- 4- The free ear lobe is dominant over the attached ear lobe.
- 5- DNA molecule is called the double helix.
- 6- Some mutations are not transmitted from a generation to another.
- 7- We must not be exposed to radiation as x-rays.
- 8- Blood stream is the only way for hormones to reach their sites of action.
- 9- Pituitary gland is called the master gland.
- 10- The stopping of the body growth, so the person becomes a dwarf.
- 11- Pancreas is a double function gland.
- 12- Diabetes disease is treated with insulin hormone.

#### **(5) Problems:**

- 1- In pea plant, what are the results of self-pollination of tall hybrid plant pure, by using the symbols (T, t) showing (parents – gametes – offspring).
- 2- Using symbols to express the results of mating between a short stemmed pea plant (tt) and a long stemmed pea plant (TT)
- 3- If a black mouse BB is crossed to a brown female mouse (bb) mention the colours and the ratios of resulting offspring in the first generation and second generation illustrated on hereditary basis.
- 4- When a pea plant that has tall stem is crossed with a pea plant that has short stem, this crossing produced individuals with the ratio of 50% tall : 50 % short what is the genetic structure of parents and producing individuals (use “T” for tall “t” for short)



# Model Answers

## (1) Complete the following:

- 1) Nitrogen pentoxide breaks up into **nitrogen dioxide** and **oxygen** gas.
- 2) At the beginning of the reaction, the concentration of reactants is **100%**.
- 3) The speed of a chemical reaction can be measured practically by the rate of **disappearance** of reactants or the rate of **appearance** of resultants.
- 4) The change in the concentration of reactants and resultants in a time unit is **the speed of chemical reaction**.
- 5) The rate of chemical reaction depends on **temperature**, **catalysts**, **concentration of reactants** and **nature of reactants**.
- 6) The reaction of contributing compounds is **slow**.
- 7) The increase in concentration of reactants makes the chemical reaction **faster**.
- 8) A substance which increases the chemical reaction without sharing in the reaction is **catalyst**.
- 9)  $2\text{NaOH} + \text{CuSO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{Cu}(\text{OH})_2 \downarrow$
- 10)  $\text{Fe} + 2\text{HCl} \rightarrow \text{FeCl}_2 + \text{H}_2 \uparrow$
- 11)  $2\text{N}_2\text{O}_5 \rightarrow 4\text{NO}_2 + \text{O}_2 \uparrow$

## (2) Give reasons for:

- 1) The speed of chemical reaction increases when the amount of the reactants increases.  
**Due to the increase in the number of collision between molecules.**
- 2) Food must be heated during its preparation.  
**To increase the speed of chemical reaction which help in cooking of food.**
- 3) Food goes rotten in summer days if it is not frozen.  
**Due to the increase of the speed of chemical reaction done by bacteria.**



### (3) How can you differentiate between:

**Sodium chloride solution and sodium hydroxide solution (by two different methods)**

**The first method:** by adding silver nitrate solution if white ppt. is formed.

∴ the solution is sodium chloride:



**The second method:** by adding copper sulphate solution if blue ppt is formed.

∴ the solution is sodium hydroxide:



### (4) Mention the function of:

- 1- refrigerator : preservation of food
- 2- Enzymes : they control digestion of food

### (5) Complete the following:

- 1- **Solution** is the mixture that is homogenous in **composition** and properties.
- 2- It is possible to dissolve more solute in the **unsaturated** solution.
- 3- An excess of the solute cannot be dissolved in **saturated** solution.
- 4- The amount of the solute in saturated solution is **less** than that in super-saturated solution.
- 5- The aqueous solution of an acid contains **H<sup>+</sup>** ions, while that of a base contains **OH<sup>-</sup>** ions.
- 6- Acids change the **blue** litmus paper into **red**.
- 7- Acids react with **bases** to give **salt** and water.
- 8- Most bases have **soapy** feel like **NaOH**.
- 9- **Lactic** acid is produced in human muscles during physical exercises.
- 10- Calcium carbonates is used in the manufacture of **glass** and **cement**.
- 11- Silver nitrates are used in the manufacture of sensitive **camera film**.



**(6) Mention one use for each:**

- 1- **Hydrochloric acid:** in detergents and polishing metals surfaces needed to be coated
- 2- **Magnesium hydroxide:** in the manufacture of antacids.

**(7) Give reason for:**

- 1- Sodium and potassium minerals have a role in the human body.  
**Because they are responsible for the transfer of nerve impulses.**
- 2- The green leaves of vegetables have a great benefit.  
**Because they contain folic acid which is necessary for the proper growth of cells.**
- 3- The molten of coinage metals is considered as a type of solution.  
**Because the coin is an alloy of copper dissolved in silver in a homogenous form.**
- 4- The rheostat are used in the electric circuit.  
**To control the electric current intensity flowing through the circuit.**

**(8) Define:**

**Ohm's law:** the electric current intensity passing through a conductor is directly proportional to the potential difference across it at constant temperature.

**(9) What's meant by:**

- **This means that the potential difference across the two points equals  $10 / 5 = 2$  volt**

**(10)  $I = \frac{q}{t} = \frac{12}{3} = 4$  amperes.**



## Unit (2)

### (1) Complete:

1- 13.5 Amp.

2- series, parallel

3-  $\text{volt} = \frac{\text{joule}}{\text{coulomb} \times \text{second}}$

4- direct – alternating

5- direct

6- series – parallel

7- radium, uranium

8- treat & diagnose diseases

### (2) Write the scientific terms:

1- electric current

2- Ammeter

3- potential difference

4- resistance

5- e.m.f

6- direct electric current

7- series connection

8- radioactivity

9- mutation

### (3)

1 – ( c )

2 – ( a )

3 – ( a )

4 – ( a )

5 – ( b )

6 – ( a )

7 – ( c )

8 – ( b )

9 – ( b )

10 – ( b )

11 – ( d )

12 – ( b )

### (4) Give reasons for:

1- because it can be transferred to long distances & can be converted to direct current.

2- To measure e.m.f. of battery.

3- To control the current intensity passing through the circuit & potential difference by changing the resistance.



- 4- To obtain high e.m.f
- 5- To obtain low e.m.f.
- 6- because the total e.m.f. for a group of cells connecting in series is equal to the sum of the e.m.f for these cells, while the total e.m.f for a group of cells connecting in parallel is equal to the e.m.f of one cell.
- 7- because their nucleus contain number of neutrons more than that required for its stability.
- 8- because it changes sex chromosomes composition results in abnormal birth.

**(5)**

1)  $q = 10 \text{ coulombs}$        $t = 2 \text{ sec.}$

$$I = \frac{q}{t} = \frac{10}{2} = 5 \text{ Ampere .}$$

2)  $q = 5400 \text{ colomb}$        $t = 5 \times 60 = 300 \text{ sec .}$

$$I = \frac{q}{t} = \frac{5400}{300} = 18 \text{ Ampere .}$$

3)  $R = 100 \text{ ohm}$       ,  $t = 30 \times 60 = 180 \text{ sec.}$

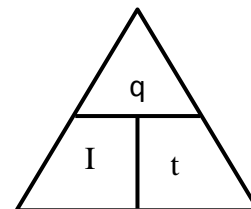
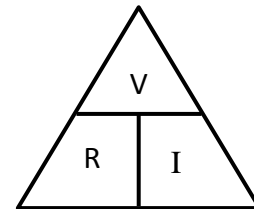
$$, V = 220 \text{ v} , R = \frac{V}{I} , I = \frac{V}{R}$$

$$\therefore I = \frac{220}{100} = 2.2 \text{ Ampere .}$$

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

$$= 2.2 \times 1800$$

$$= 3960 \text{ coulomb .}$$







## ( Unit 3 , 4 )

### (1)

- 1 – Acquired .
- 2 – Mendel , Peaplant , hermaphodite .
- 3 – Dominant .
- 4 – DNA , protien .
- 5 – Watson & creck .
- 6 – Cytosine ( c ) .
- 7 – nitrogeueus bases .
- 8 – endocrine glands .
- 9 – Pituitary – growth .
- 10 – Thyroxine hormone .
- 11 – hormone .

### (2)

- |                         |                                   |
|-------------------------|-----------------------------------|
| 1 – Hereditary traits . | 2 – Dominant trait .              |
| 3 – genes .             | 4 – hereditary factor ( genes ) . |
| 5 – genes .             | 6 – chromosomes .                 |
| 7 – Induced mution .    | 8 – endocrine glands .            |
| 9 – hormone .           | 10 – Insulin .                    |
| 11 – hormone disorder . |                                   |

### (3)

- |            |           |                     |
|------------|-----------|---------------------|
| 1 – 7      | 2 – pure  | 3 – straight hair . |
| 5 – watson | 6 – Gene  | 7 – 2               |
| 8 – white  | 9 – ( a ) | 10 – ( c )          |
| 11 – ( d ) |           |                     |