

Answer Four Questions Only of the Following:**First Question: Mention the scientific concept expressed by each statement:**

- ١- The last sublevel in the main transition elements.
(.....)
- ٢- Substances that can conduct electricity, being either molten or a solution.
(.....)
- ٣- The product of multiplication of current intensity in amperes and time in seconds.
(.....)
- ٤- Substances used to determine the end point of a reaction since its color changes as the reaction medium changes.
- ٥- A chemical compound in plants that absorbs light in order to synthesis carbohydrates.
(.....)
- ٦- Unsaturated aliphatic hydrocarbonates of general formula $C_n H_{\nu_n}$
(.....)
- ٧- A transition element, of atomic number (ν^9), is used in making the electrical cables and coin alloys.
(.....)
- ٨- The scientist who discovered the hexagonal cyclic shape of the benzene ring.
(.....)
- ٩- A type of reactions that proceed in one direction (almost the forward direction).
(.....)
- ١٠- An element used in the manufacture of car tires, varnish and as a dye in black ink.
(.....)

- ١١- Reactions used in estimating the mass of substances that are sparingly soluble in water.
(.....)
- ١٢- A group of chemical compounds that originate from mineral resources in earth.
(.....)
- ١٣- A branch of chemistry that helps in detecting and measuring the contents of water and food.
(.....)
- ١٤- The electrode in the electrochemical cells at which oxidation reactions take place.
(.....)
- ١٥- The common name of ethene.
(.....)

Second Question: Correct the underlined words in each statement:

- ١- Hydrogen sulphide gas has no smell. (.....)
- ٢- Main transition elements exist in five vertical columns. (.....)
- ٣- Sulphoric acid is the reagent of nitrite anion. (.....)
- ٤- The gas fuel in the fuel cell is of nitrogen and oxygen. (.....)
- ٥- One of the reactions the need many months to complete is the reaction of methane gas combustion. (.....)
- ٦- The process of forming a thin layer of a metal on the surface of another metal by passing the electric current is known as carbon plating.
(.....)
- ٧- The iron electrode in the galvanic cell is known as the cathode.
(.....)

- ٨- Sulphonation is adding the **sulphoric acid** group in the position of a hydrogen atom in the benzene ring. (.....)
- ٩- Ionization is the process of converting unionized molecules into **covalent compounds**. (.....)
- ١٠- Carbon atoms in alkanes bind together by strong **pi** bonds. (.....)
- ١١- The neutral solution has a pH value equal to ٧. (.....)
- ١٢- The pH value is the negative logarithm of the concentration of the **oxygen** ion. (.....)
- ١٣- CH_4 is the chemical formula of **Argon** gas. (.....)
- ١٤- Transition elements are characterized by having many **reduction** states. (.....)
- ١٥- The car fuel is **naphthalene** which is completely different than aromatic benzene. (.....)

Third Question: Put the sign (✓) in front of the correct statement and the

sign (×) in front the wrong ones:

- ١- In the fourth transition series, the d sublevel is successively filled. ()
- ٢- The rate of the chemical reaction is affected by the concentration of the reactants. ()
- ٣- Copper metal can be purified by electrolysis. ()
- ٤- Bromine vapor is purple in color and causes the starch solution to turn blue. ()
- ٥- Aluminum is extracted electrically from bauxite ore. ()

- ٥- A chemical corrosion of metals due to the effect of the surrounding medium is known as
- a) Dissolution b) Hydration c) Rusting d) Ionization
- ٦- The number of hydrogen atoms in the alkane molecule that contains four carbon atoms is ...
- a) ٥ b) ١٠ c) ٧ d) ٨
- ٧- A transition element that has high chemical reactivity but can resist the action of the atmospheric conditions is
- a) Copper b) Chromium c) Zinc d) Titanium
- ٨- Each of the following can be classified as an organic compound, except
- a) CH_4 b) C_2H_2 c) C_2H_4 d) AgNO_3
- ٩- A substance which is a good conductor of electricity is
- a) Pure acetic acid b) Sodium chloride solution
c) Boric acid d) Dry hydrogen chloride gas
- ١٠- The scientist who deduced the relation between the quantity of electricity passing through an electrolytic solution and the amount of the liberated substance at the electrodes is
- a) Faraday b) Ostwald
c) Waage d) Le Chatelier
- ١١- The two elements that exist in most organic compounds are
- a) Carbon and nitrogen b) Carbon and sulphur
c) Carbon and hydrogen d) hydrogen and oxygen
- ١٢- When HNO_3 decomposes, the gas that evolves is
- a) H_2 b) NO c) NO_2 d) H_2O
- ١٣- Benzene reacts with hydrogen under pressure and temperature to give
- a) Cyclohexane b) Chlorobenzene
c) Toluene d) Nitrobenzene
- ١٤- Carbon atoms combine together in cyclohexane as
- a) Continuous chain b) Branched chain
c) Homo-cyclic shape d) Hetero-cyclic shape
- ١٥- Detection of ... anion is carried out using concentrated sulphuric acid.
- a) Phosphate b) Chloride c) Nitrite d) Carbonate

Fifth Question: Choose a concept or a word of the following for the statement that fits, then put its number between the brackets:

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|----------------------------|--------------------------|------------------------|
| (١) Cobalt 60 isotope | (٢) Conc. sulphuric acid | (٣) activation energy |
| (٤) MgO | (٥) Acetylene | (٦) Structural formula |
| (٧) Hydrometer | (٨) CaF_2 | (٩) Blast furnace |
| (١٠) Halogenation | (١١) Hydrocarbons | (١٢) C_7H_8 |
| (١٣) The coulomb | (١٤) Magnetic iron oxide | (١٥) Paraffin wax |
- ١- Used in the preservation of food stuff. ()
- ٢- A white precipitate formed as a product of heating magnesium bicarbonate. ()
- ٣- The tool used to measure the density of sulphuric acid in the lead accumulator. ()
- ٤- The minimum energy possessed by the molecule to react on collision. ()
- ٥- An example of solid compounds that contain more than 14 carbon atom. ()
- ٦- A construction in which the process of the reduction of iron ores and extraction of iron take place. ()
- ٧- The quantity of electricity required to deposit $^{1.118}$ mg of silver. ()
- ٨- A group of organic compounds that contain carbon and hydrogen elements. ()
- ٩- An organic compound whose chemical formula is C_7H_8 . ()
- ١٠- An ore that exists in nature and known as magnetite. ()
- ١١- The chemical formula of Fluorspar. ()
- ١٢- The reaction of halogens with alkenes by addition. ()
- ١٣- An acid used to detect the chloride ion. ()
- ١٤- The chemical formula of propane. ()
- ١٥- The formula that illustrates the type and the number of atoms of each element in the compound. ()

(انتهى الأسئلة)