

**Egypt-Japan University of Science and Technology**  
**Entrance Exam (Undergraduate)**

**Subject: Chemistry**

**Academic Year:**

**No. of Pages:**

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**Exam Time:**

**Student Name:**

**Applicant E-JUST Admission ID:**



**Choose the correct answer:**

**1. Which gas can be produced by incomplete combustion of hydrocarbons?**

- A. Sulfur dioxide.
- B. Nitrogen dioxide.
- C. Hydrogen chloride.
- D. Carbon monoxide.

**2. The scientist who presented the modern periodic table of elements is.....**

- A. Nobel.
- B. Lavoisier.
- C. Mendel.
- D. Mendeleev

**3. All the following reactions are considered as neutralization reactions EXCEPT:**

- A.  $\text{CH}_3\text{COOH} + \text{NaOH}$
- B.  $\text{H}_3\text{PO}_4 + \text{BaCl}_2$
- C.  $\text{HCl} + \text{KOH}$
- D.  $\text{H}_2\text{CO}_3 + \text{LiOH}$

**4. What is the order of decreasing energy of the orbitals within a single energy levels?**

- A.  $d > s > f > p$
- B.  $f > d > p > s$
- C.  $p > s > f > d$
- D.  $f < d < p < s$

**5. Of the following symbol/name combinations of elements, which one is WRONG?**

- A. C/carbon.
- B. B/barium.
- C. F/fluorine.
- D. Na/sodium.

**6. pH factor is used to measure .....**

- A. color of a liquid.
- B. acidity of a liquid.
- C. density of a liquid.
- D. turbidity of a liquid.

**7. If a dynamic equilibrium is distributed by changing the conditions, the position of equilibrium moves to decrease this change. This statement is for -----.**

- A. first law of thermodynamics
- B. Le Chaterlier's principle
- C. ideal gas law
- D. Avogadro's law

**8. Which of the following pairs of liquids is miscible?**

- A. benzene, (C<sub>6</sub>H<sub>6</sub>) and methanol (CH<sub>3</sub>OH).
- B. water and methanol.
- C. water and hexane (C<sub>6</sub>H<sub>12</sub>).
- D. water and benzene.

**9. When MgCl<sub>2</sub> is treated with sulfuric acid, the precipitate formed is .....**

- A. MgS<sub>2</sub>O<sub>4</sub>
- B. MgSO<sub>3</sub>
- C. MgSO<sub>2</sub>
- D. MgSO<sub>4</sub>

**10. The solubility of oxygen in water ..... with increasing the temperature.**

- A. increases.
- B. decreases.
- C. remain the same.
- D. stop dissolving.

**11. Acid rain is caused due to increase in the concentration of ..... in the atmosphere.**

- A. ozone.
- B. oxygen.
- C. nitrogen gas.
- D. sulfur dioxide gas.

**12. Covalent bond results from ..... electrons between the atoms, while ionic bond results from the ..... of electrons from a metal to a nonmetal**

- A. sharing, transfer.
- B. sharing, sharing.
- C. transfer, transfer.
- D. transfer, sharing.

**13. All of the following compounds are saturated except .....**

- A. Propane.
- B. Benzene.
- C. Butyl chloride.
- D. Propanol.

**14. The IUPAC name of  $\text{CH}_3\text{CH}_2\text{CHO}$  compound is .....**

- A. Propanone.
- B. Propanol.
- C. Propanal.
- D. Butanal.

**15. A catalyst.....**

- A. increases the reaction rate.
- B. changes the reaction equilibrium.
- C. decreases the rate for a reaction.
- D. increases the activation energy for a reaction.

**16. The formula weight of the compound,  $\text{Al}_2(\text{SO}_4)_3 \cdot 18\text{H}_2\text{O}$  is:**

- A. 394.4 g
- B. 666.4 g
- C. 110,900 g
- D. 466.8 g

**17. Consider the neutralization reactions between the following acid-base pairs in dilute aqueous solutions:**

- (1)  $\text{CH}_3\text{COOH} + \text{NaOH} \longrightarrow$
- (2)  $\text{HNO}_3 + \text{Mg}(\text{OH})_2 \longrightarrow$
- (3)  $\text{H}_3\text{PO}_4 + \text{Ba}(\text{OH})_2 \longrightarrow$
- (4)  $\text{HCl} + \text{KOH} \longrightarrow$
- (5)  $\text{H}_2\text{CO}_3 + \text{LiOH} \longrightarrow$

For which of the reactions is the **net ionic** equation:  $\text{H}^+ + \text{OH}^- \rightarrow \text{H}_2\text{O}$  ?

- A. 1, 3
- B. 1, 4, 5
- C. 2, 3
- D. 4

**18. The vapor pressure of a solution containing a nonvolatile solute is directly proportional to the**

- A. molality of the solvent.
- B. osmotic pressure of the solute.
- C. molarity of the solvent.
- D. mole fraction of solvent.

**19. Which among the following is a covalent compound?**

- A. Calcium chloride
- B. Magnesium fluoride
- C. Sodium chloride
- D. Carbon tetrachloride

**20. Electric bulbs are filled with:**

- A. Nitrogen
- B. Carbon dioxide
- C. Argon
- D. Oxygen

**Good Luck**