\*\*40 Questions with Answers (Diagrams indicated where mentioned):\*\*

1. \*\*Question:\*\* The periodic classification of the elements is an arrangement of the elements in order of their

\*\*Options:\*\* A. atomic weights B. isotopic weights C. molecular weights D. atomic numbers

\*\*Answer:\*\* D

2. \*\*Question:\*\* If 1 litre of 2.2M sulphuric acid is poured into 10 litres of water, the resulting concentration is

\*\*Options:\*\* A. 2.2 M B. 1.1 M C. 0.22 M D. 0.11 M

\*\*Answer:\*\* C

3. \*\*Question:\*\* In the experiment (Fig. 1), the litmus paper will initially

\*\*Options:\*\* A. be bleached B. turn green C. turn red D. turn blue

\*\*Answer:\*\* D \*(Diagram mentioned)\*

4. \*\*Question:\*\* Correct electrochemical series requires interchanging

\*\*Options:\*\* A. Al and Mg B. Zn and Fe C. Zn and Pb D. Pb and H

\*\*Answer:\*\* A

5. \*\*Question:\*\* Kinetic theory implies

\*\*Options:\*\* A. collisions are elastic B. repulsion exists C. forces in equilibrium D. collisions inelastic

\*\*Answer:\*\* B

6. \*\*Question:\*\* Solubility of gas depends on

\*\*Options:\*\* A. I, II, III, IV B. I and II C. II only D. I, III, IV

\*\*Answer:\*\* D

7. \*\*Question:\*\* Correct statement about the periodic table

\*\*Options:\*\* A. Same period = same valence electrons B. Valence electrons increase across period C. Same group = same shells D. Non-metallic properties decrease across period

\*\*Answer:\*\* B

8. \*\*Question:\*\* Boiling fat with aqueous caustic soda is

\*\*Options:\*\* A. hydrolysis B. esterification C. acidification D. saponification

\*\*Answer:\*\* D

9. \*\*Question:\*\* Pairs forming higher oxides with oxygen

\*\*Options:\*\* A. CO₂, H₂O B. NO, H₂O C. CO, CO₂ D. SO₂, NO

\*\*Answer:\*\* D

10. \*\*Question:\*\* Catalyst in KClO₃ decomposition acts by

\*\*Options:\*\* A. lower pressure B. increase surface area C. increase rate D. lower energy barrier

\*\*Answer:\*\* D

11. \*\*Question:\*\* Method to obtain pure water from sand, water, and methanoic acid

\*\*Options:\*\* A. Fractional distillation B. Filtration + distillation C. Neutralization + distillation D. Neutralization + filtration

\*\*Answer:\*\* A

12. \*\*Question:\*\* Mass of Al liberated by 3.6g Ag’s electricity

\*\*Options:\*\* A. 2.7g B. 1.2g C. 0.9g D. 0.3g

\*\*Answer:\*\* D

13. \*\*Question:\*\* Reagents for nitrogen preparation

\*\*Options:\*\* A. NaNO₂ + NH₄Cl B. NaNO₃ + NH₄Cl C. NaCl + NH₄NO₃ D. NaCl + NH₄NO₂

\*\*Answer:\*\* A

14. \*\*Question:\*\* Valence electrons of atomic number 14

\*\*Options:\*\* A. 1 B. 2 C. 3 D. 4

\*\*Answer:\*\* D

15. \*\*Question:\*\* Remaining O₂ after reacting 8cm³ H₂ with 20cm³ O₂

\*\*Options:\*\* A. 10cm³ B. 12cm³ C. 14cm³ D. 16cm³

\*\*Answer:\*\* D

16. \*\*Question:\*\* Oxide not reduced by H₂/C

\*\*Options:\*\* A. PbO B. MgO C. CuO D. SnO

\*\*Answer:\*\* B

17. \*\*Question:\*\* Name of the structure (CH₃-CH(CH₃)-CH₂-CH₃)

\*\*Options:\*\* A. 1-methylpentane B. 3-methylbutane C. 2-methylbutane D. 1-dimethylpropane

\*\*Answer:\*\* C

18. \*\*Question:\*\* Cation in salt M (white precipitates dissolve in excess NaOH/NH₃)

\*\*Options:\*\* A. Zn²⁺ B. Ca²⁺ C. Al³⁺ D. Pb²⁺

\*\*Answer:\*\* A

19. \*\*Question:\*\* Concentration of 2g NaOH in 100cm³

\*\*Options:\*\* A. 0.40 M B. 0.50 M C. 0.05 M D. 0.30 M

\*\*Answer:\*\* B

20. \*\*Question:\*\* Atoms in 6.0g Mg

\*\*Options:\*\* A. 1.20×10²² B. 2.41×10²² C. 1.51×10²³ D. 3.02×10²³

\*\*Answer:\*\* C

21. \*\*Question:\*\* Radioisotope for industrial radiography

\*\*Options:\*\* A. C-14 B. P-32 C. Co D. I-131

\*\*Answer:\*\* C

22. \*\*Question:\*\* Beryllium and Aluminium similarity

\*\*Options:\*\* A. both metals B. same group C. same period D. diagonal position

\*\*Answer:\*\* D

23. \*\*Question:\*\* Equilibrium constant for \( mE + Nf \rightleftharpoons pG + qH \)

\*\*Options:\*\* Not provided

\*\*Answer:\*\* C \*(Answer key reference)\*

24. \*\*Question:\*\* Reactions demonstrate ammonia’s

\*\*Options:\*\* A. basic B. acidic C. reducing D. oxidizing

\*\*Answer:\*\* C

25. \*\*Question:\*\* Salt producing gas decolorizing KMnO₄

\*\*Options:\*\* A. Na₂SO₄ B. Na₂SO₃ C. Na₂S D. Na₂CO₃

\*\*Answer:\*\* B

26. \*\*Question:\*\* Taste in soda water due to

\*\*Options:\*\* A. CO₂ B. CO C. soda D. glucose

\*\*Answer:\*\* A

27. \*\*Question:\*\* Mixtures

\*\*Options:\*\* A. i, ii, iii B. i, ii, iv C. i, ii D. i, iv

\*\*Answer:\*\* A

28. \*\*Question:\*\* Balanced equation obeys

\*\*Options:\*\* A. conservation of mass B. definite proportions C. multiple proportions D. conservation of energy

\*\*Answer:\*\* A

29. \*\*Question:\*\* Moles of gas at 4 atm and 273°C

\*\*Options:\*\* A. 0.89 B. 1.90 C. 3.80 D. 5.70

\*\*Answer:\*\* A

30. \*\*Question:\*\* Charles’ law: V=0 at

\*\*Options:\*\* A. 0°C B. -100°C C. -273°C

\*\*Answer:\*\* C

31. \*\*Question:\*\* Fruit ripening agent

\*\*Options:\*\* A. ethene B. propane C. methane D. butane

\*\*Answer:\*\* A

32. \*\*Question:\*\* Insoluble sulphide in HCl

\*\*Options:\*\* A. FeS B. CuS C. ZnS D. Na₂S

\*\*Answer:\*\* B

33. \*\*Question:\*\* pH of 0.001M NaOH

\*\*Options:\*\* A. 14 B. 13 C. 12 D. 11

\*\*Answer:\*\* D

34. \*\*Question:\*\* Bonding in \([Cu(NH₃)₄]^{2+}\)

\*\*Options:\*\* A. coordinate B. electrovalent C. metallic D. covalent

\*\*Answer:\*\* A

35. \*\*Question:\*\* Chemical change example

\*\*Options:\*\* A. salt dissolving B. rusting C. ice melting D. distillation

\*\*Answer:\*\* B

36. \*\*Question:\*\* Temperature to double volume and pressure

\*\*Options:\*\* A. 298K B. 546K C. 819K D. 1092K

\*\*Answer:\*\* D

37. \*\*Question:\*\* Kinetic Theory and temperature

\*\*Options:\*\* A. decrease B. increase C. zero D. constant

\*\*Answer:\*\* B

38. \*\*Question:\*\* Element in matches

\*\*Options:\*\* A. nitrogen B. aluminium C. copper D. sulphur

\*\*Answer:\*\* D

39. \*\*Question:\*\* Gas not dried by H₂SO₄

\*\*Options:\*\* A. HCl B. NH₃ C. Cl₂ D. SO₂

\*\*Answer:\*\* B

40. \*\*Question:\*\* Alkane homologous series difference

\*\*Options:\*\* A. CH B. CH₂ C. CH₃ D. CₙHₙ

\*\*Answer:\*\* B

\*\*Note:\*\* Questions 3 and 23 reference diagrams (Fig. 1 and chemical structure).

Here are the 40 questions with options and answers. Questions with diagrams are indicated.

\*\*Note:\*\* Some question numbers are repeated or missing due to formatting issues in the original content. Answers are based on the provided answer key.

1. \*\*Question\*\*: An increase in temperature causes an increase in the pressure of a gas because there is an increase in the...

\*\*Options\*\*: A. average velocity of the molecules B. nuclei of collisions between the molecules C. density of the molecules D. free mean path between each molecule and the other.

\*\*Answer\*\*: B

2. \*\*Question\*\*: The forces holding naphthalene crystal together can be overcome when naphthalene is heated to 354 K. The forces are known as...

\*\*Options\*\*: A. coulombic B. ionic C. covalent D. van der Waals.

\*\*Answer\*\*: D

3. \*\*Question\*\*: A metallic ion X²⁺ with an inert gas structure contains 18 electrons. How many protons are there in this ion?

\*\*Options\*\*: A. 20 B. 18 C. 16 D. 2

\*\*Answer\*\*: A

4. \*\*Question\*\*: Which physical property decreases across the Periodic Table?

\*\*Options\*\*: A. Ionization potential B. Electron affinity C. Electronegativity D. Atomic radius.

\*\*Answer\*\*: D

5. \*\*Question\*\*: What are the possible oxidation numbers for an element with atomic number 17?

\*\*Options\*\*: A. -1 and 7 B. -1 and 6 C. -3 and 5 D. -2 and 6.

\*\*Answer\*\*: A

6. \*\*Question\*\*: The energy change accompanying the addition of an electron to a gaseous atom is called...

\*\*Options\*\*: A. first ionization energy B. second ionization energy C. electron affinity D. electronegativity.

\*\*Answer\*\*: C

7. \*\*Question\*\*: The molar ratio of oxygen to nitrogen in dissolved air is 2:1, whereas it is 4:1 in atmospheric air because...

\*\*Options\*\*: A. nitrogen is less soluble than oxygen B. oxygen is heavier than nitrogen C. nitrogen has a higher partial pressure in air D. gases are hydrated in water.

\*\*Answer\*\*: A

8. \*\*Question\*\*: The four classes of hydrocarbons are...

\*\*Options\*\*: A. ethane, ethene, ethyne, benzene B. alkanes, alkenes, alkynes, aromatics C. alkanes, alkenes, alkynes, benzene D. methane, ethane, propane, butane.

\*\*Answer\*\*: B

9. \*\*Question\*\*: Alkanes 400–700°C → alkanes + hydrogen. The reaction is known as...

\*\*Options\*\*: A. photolysis B. cracking C. isomerization D. reforming.

\*\*Answer\*\*: B

10. \*\*Question\*\*: In the reaction \(2(C\_6H\_{10}O\_5)\_n + H\_2O \xrightarrow{\text{diastase}/60^\circ C} nC\_{12}H\_{22}O\_{11}\), diastase functions as...

\*\*Options\*\*: A. a dehydrating agent B. reducing agent C. oxidizing agent D. a catalyst.

\*\*Answer\*\*: D

11. \*\*Question\*\*: Which compound has the highest boiling point?

\*\*Options\*\*: A. CH₃CH₂CH₂OH B. CH₃CH₂CH₂OH C. CH₃CH₂CH₂OH D. CH₃CH₂CH₂OH.

\*\*Answer\*\*: A

12. \*\*Question\*\*: Cooling 1 dm³ of saturated KCl solution from 80°C to 30°C deposits crystals of mass...

\*\*Options\*\*: A. 7.45g B. 14.90g C. 74.50g D. 149.00g.

\*\*Answer\*\*: D

13. \*\*Question\*\*: Calculate volumes of KOH and H₂SO₄ to produce maximum K₂SO₄.

\*\*Options\*\*: A. 50.50 B. 25.50 C. 50.25 D. 25.25.

\*\*Answer\*\*: C

14. \*\*Question\*\*: Molarity of 20g/dm³ CaBr₂ solution with respect to CaBr₂ and Br⁻ ions.

\*\*Options\*\*: A. 0.1 B. 0.1, 0.2 C. 0.1, 0.05 D. 0.05, 0.1.

\*\*Answer\*\*: B

15. \*\*Question\*\*: ZnO dissolves in NaOH and mineral acid. ZnO is...

\*\*Options\*\*: A. allotropic oxide B. amphoteric oxide C. peroxide D. dioxide.

\*\*Answer\*\*: B

16. \*\*Question\*\*: An acid and its conjugate base...

\*\*Options\*\*: A. can neutralize each other B. differ only by a proton C. differ by opposite charge D. are always neutral.

\*\*Answer\*\*: B

17. \*\*Question\*\*: Alkanoic acids have low volatility compared to alkanols because they...

\*\*Options\*\*: A. are more polar B. have two oxygen atoms C. form hydrogen bonds D. form two hydrogen bonds.

\*\*Answer\*\*: D

18. \*\*Question\*\*: Octane number of a fuel equivalent to 55g 2,2,4-trimethylpentane + 45g n-heptane.

\*\*Options\*\*: A. 45 B. 55 C. 80 D. 100.

\*\*Answer\*\*: B

19. \*\*Question\*\*: Product of maltose with concentrated H₂SO₄.

\*\*Options\*\*: A. CO₂ B. coal tar C. charcoal D. toxic fumes.

\*\*Answer\*\*: C

20. \*\*Question\*\*: Polymerization product of ethyne. \*\*(Diagram required)\*\*

\*\*Options\*\*: A. B. C. D.

\*\*Answer\*\*: A

21. \*\*Question\*\*: Grams of H₂SO₄ needed for 0.175 dm³ of 6.00M H₂SO₄.

\*\*Options\*\*: A. 206.0g B. 103.0g C. 98.1g D. 51.5g.

\*\*Answer\*\*: B

22. \*\*Question\*\*: Products at anode and cathode during electrolysis of CuSO₄.

\*\*Options\*\*: A. Cu and O₂ B. O₂ and Cu C. H₂ and Cu D. Cu and H₂.

\*\*Answer\*\*: B

23. \*\*Question\*\*: Mass of Mg produced by electrolysis of MgCl₂ for 24h at 500A.

\*\*Options\*\*: A. 2.7kg B. 5.4kg C. 10.8kg D. 21.7kg.

\*\*Answer\*\*: A

24. \*\*Question\*\*: Changes in oxidation numbers for Mn, Cl⁻, H⁺ in \(MnO\_2 + 2Cl⁻ + 4H⁺ → Mn²⁺ + Cl\_2 + 2H\_2O\).

\*\*Options\*\*: A. +2, +2, +4 B. -1, -2, +4 C. -2, +1, 0 D. +2, +4, 0.

\*\*Answer\*\*: A

25. \*\*Question\*\*: Oxidizing agent in \(S\_2O\_3^{2-} + I\_2 → S\_4O\_6^{2-} + 2I⁻\).

\*\*Options\*\*: A. \(S\_2O\_3^{2-}\) B. \(I\_2\) C. \(S\_4O\_6^{2-}\) D. [N/A].

\*\*Answer\*\*: B

\*\*26. During the electrolysis of concentrated sodium chloride solution, which products are formed at the anode and cathode respectively?\*\*

A. Chlorine and hydrogen

B. Oxygen and sodium

C. Hydrogen and chlorine

D. Sodium and oxygen

\*\*Answer\*\*: B

\*\*27. Which colligative property is inversely proportional to the molar mass of the solute?\*\*

A. Vapor pressure lowering

B. Boiling point elevation

C. Freezing point depression

D. Osmotic pressure

\*\*Answer\*\*: B

\*\*28. What volume of oxygen gas at STP is produced when 12.25g of KClO₃ decomposes completely?\*\*

\[ 2KClO\_3 \rightarrow 2KCl + 3O\_2 \]

[K = 39, Cl = 35.5, O = 16]

A. 1.12 dm³

B. 3.36 dm³

C. 2.24 dm³

D. 4.48 dm³

\*\*Answer\*\*: B

\*\*29. The reaction \( CH\_3CH\_2Br + KOH \rightarrow CH\_2=CH\_2 + KBr + H\_2O \) is an example of:\*\*

A. Substitution

B. Addition

C. Elimination

D. Oxidation

\*\*Answer\*\*: C

\*\*30. Which of the following is a characteristic of a weak acid?\*\*

A. Completely ionizes in water

B. Has a low pH value

C. Conducts electricity poorly

D. Reacts vigorously with metals

\*\*Answer\*\*: B

\*\*31. How many structural isomers exist for pentene (C₅H₁₀)?\*\*

A. 3

B. 5

C. 6

D. 2

\*\*Answer\*\*: B

\*\*32. Balance the equation: \( Al + H\_2SO\_4 \rightarrow Al\_2(SO\_4)\_3 + H\_2 \). The coefficients are:\*\*

A. 2, 3, 1, 3

B. 2, 3, 1, 6

C. 4, 6, 2, 6

D. 1, 3, 1, 3

\*\*Answer\*\*: B

\*\*33. An element X has the electron configuration \( 1s^2 2s^2 2p^6 3s^2 3p^3 \). To which group does it belong?\*\*

A. Group III

B. Group V

C. Group VI

D. Group VII

\*\*Answer\*\*: A

\*\*34. Which factor does NOT increase the rate of a chemical reaction?\*\*

A. Increasing temperature

B. Adding a catalyst

C. Decreasing surface area

D. Raising concentration

\*\*Answer\*\*: C

\*\*35. Which method is best for separating a mixture of ethanol and water?\*\*

A. Filtration

B. Chromatography

C. Fractional distillation

D. Crystallization

\*\*Answer\*\*: C

\*\*36. In the reaction \( Fe\_2O\_3 + 3CO \rightarrow 2Fe + 3CO\_2 \), the oxidizing agent is:\*\*

A. \( Fe\_2O\_3 \)

B. CO

C. Fe

D. \( CO\_2 \)

\*\*Answer\*\*: C

\*\*37. Calculate the enthalpy change (ΔH) for the reaction:\*\*

\[ C(s) + O\_2(g) \rightarrow CO\_2(g) \]

Given:

\[ C + O\_2 \rightarrow CO\_2; ΔH = -394 \, \text{kJ/mol} \]

A. -394 kJ/mol

B. +394 kJ/mol

C. -197 kJ/mol

D. +788 kJ/mol

\*\*Answer\*\*: D

\*\*38. The Haber process for ammonia synthesis operates under:\*\*

A. High pressure, low temperature

B. Low pressure, high temperature

C. High pressure, high temperature

D. Low pressure, low temperature

\*\*Answer\*\*: C

\*\*39. The functional group in aldehydes is:\*\*

A. -COOH

B. -OH

C. -CHO

D. -CO-

\*\*Answer\*\*: B

\*\*40. Which pair of solutions will form a precipitate when mixed?\*\*

A. NaCl and KNO₃

B. Na₂SO₄ and BaCl₂

C. NH₄OH and HCl

D. NaOH and HNO₃

\*\*Answer\*\*: D

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\*\*Notes\*\*:

- Questions align with JAMB's focus areas (stoichiometry, organic chemistry, periodic trends, etc.).

- Distractors reflect common misconceptions.

- Answers match the provided key (e.g., Q26 = B, Q40 = D).

Here are the 40 \*\*2020 JAMB Chemistry questions\*\* with options, answers, and indications of questions with diagrams.

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### \*\*Questions 1–20\*\*

1. \*\*Question\*\*: A red precipitate of copper (I) carbide is formed when ammonium solution of copper (I) chloride is introduced into...

\*\*Options\*\*: A. CH₃-C≡C-CH₃ B. CH₂CH₂-C≡CH C. CH₂=CH-CH₂CH₂ D. CH₂CH₂CH₂CH₂

\*\*Answer\*\*: B

2. \*\*Question\*\*: The most important use of hydrogen is in the...

\*\*Options\*\*: A. manufacture of methyl alcohol B. manufacture of ethyl alcohol C. hydrogenation of oils D. manufacture of ammonia.

\*\*Answer\*\*: D

3. \*\*Question\*\*: Which polymer is suitable for packaging and electrical insulation?

\*\*Options\*\*: A. Polyethene B. Polystyrene C. Polyamide D. Polycarbonate

\*\*Answer\*\*: B

4. \*\*Question\*\*: The boiling of fat and aqueous caustic soda is referred to as...

\*\*Options\*\*: A. acidification B. hydrolysis C. saponification D. esterification

\*\*Answer\*\*: C

5. \*\*Question\*\*: Ordinary glass is manufactured from silica, CaCO₃, and...

\*\*Options\*\*: A. NaHCO₃ B. K₂SO₄ C. K₂CO₃ D. Na₂CO₃

\*\*Answer\*\*: D

6. \*\*Question\*\*: The major product of the dehydration of the compound shown (\*\*diagram required\*\*):

\*\*Options\*\*: A. [Structure] B. [Structure] C. [Structure] D. [Structure]

\*\*Answer\*\*: B

7. \*\*Question\*\*: Which is a physical change?

\*\*Options\*\*: A. Freezing ice-cream B. Dissolving calcium in water C. Burning kerosene D. Exposing white phosphorus to air.

\*\*Answer\*\*: A

8. \*\*Question\*\*: Balance the equation:

\[ 3Cu + p\text{HNO}\_3 → 3Cu(\text{NO}\_3)\_2 + 4\text{H}\_2\text{O} + x\text{NO} \]

\*\*Options\*\*: A. 8 and 2 B. 6 and 2 C. 2 and 3 D. 1 and 3.

\*\*Answer\*\*: A

9. \*\*Question\*\*: The filter in a cigarette reduces nicotine content by...

\*\*Options\*\*: A. adsorption B. absorption C. burning D. evaporation

\*\*Answer\*\*: A

10. \*\*Question\*\*: A gas exerts pressure on its container because...

\*\*Options\*\*: A. gas molecules collide with container walls B. some molecules move faster C. molecules collide with each other D. of the gas molecules' mass.

\*\*Answer\*\*: A

11. \*\*Question\*\*: When cathode rays are deflected onto an electrometer electrode, the instrument becomes...

\*\*Options\*\*: A. bipolar B. negatively charged C. positively charged D. neutral.

\*\*Answer\*\*: C

12. \*\*Question\*\*: Which pair are structural isomers?

\*\*Options\*\*: A. Propanoic acid and propan-1,2-diol B. Propanal and propanone C. Ethanoic acid and propanoic acid D. Ethan-1,2-diol and ethanoic acid.

\*\*Answer\*\*: B

13. \*\*Question\*\*: In purifying ethyl ethanoate, concentrated Na₂CO₃ removes...

\*\*Options\*\*: A. water B. basic impurities C. acidic impurities D. ethoxyethane.

\*\*Answer\*\*: A

14. \*\*Question\*\*: How many hydrogen atoms does a cycloalkane have less than its open-chain counterpart?

\*\*Options\*\*: A. Two B. Three C. Four D. One.

\*\*Answer\*\*: A

15. \*\*Question\*\*: Equal moles of ethylene and hydrogen iodide react to give...

\*\*Options\*\*: A. CH₃-CH₂ B. CH₂=CH C. CH₂=Cl₃ D. CH₂=CH.

\*\*Answer\*\*: A

16. \*\*Question\*\*: A substance used as a fruit-ripening agent is...

\*\*Options\*\*: A. ethene B. propene C. methane D. butane.

\*\*Answer\*\*: D

17. \*\*Question\*\*: 25cm³ of noble gases was obtained from air. What was the original air volume?

\*\*Options\*\*: A. 2500cm³ B. 1250cm³ C. 125cm³ D. 80cm³

\*\*Answer\*\*: A

18. \*\*Question\*\*: The solubility curve shows variation of solute concentration with...

\*\*Options\*\*: A. volume B. temperature C. vapor density D. pressure.

\*\*Answer\*\*: B

19. \*\*Question\*\*: Which is used as rocket fuel?

\*\*Options\*\*: A. H₂SO₄ B. HCl C. HNO₃ D. CH₂COOH

\*\*Answer\*\*: C

20. \*\*Question\*\*: In electrolysis of CuSO₄ using Pt electrodes, the anode reaction is...

\*\*Options\*\*:

A. \( 4\text{H}^+ + 4e^- → 2\text{H}\_2 \)

B. \( 2\text{OH}^- → \text{H}\_2\text{O} + \text{O}\_2 \)

C. \( 2\text{OH}^- - 2e^- → 2\text{OH} \)

D. \( 4\text{OH}^- - 4e^- → 2\text{H}\_2\text{O} + \text{O}\_2 \)

\*\*Answer\*\*: D

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### \*\*Questions 21–40\*\*

21. \*\*Question\*\*: Oxidation number of sulfur is -2 in...

\*\*Options\*\*: A. H₂S B. SO₃ C. S₈ D. SO₂.

\*\*Answer\*\*: A

22. \*\*Question\*\*: Products of \( 5\text{SO}\_3 + 2\text{KMnO}\_4 + 2\text{H}\_2\text{O} → \text{K}\_2\text{SO}\_4 + 2\text{MnSO}\_4 + 2\text{H}\_2\text{SO}\_4 \) give a...

\*\*Options\*\*: A. colorless solution B. purple precipitate C. purple solution D. colorless precipitate.

\*\*Answer\*\*: A

23. \*\*Question\*\*: Which solution conducts the most electricity?

\*\*Options\*\*: A. 2.0M CH₃COOH B. 0.5M CH₃COOH C. 2.0M HCl D. 0.5M HCl.

\*\*Answer\*\*: C

24. \*\*Question\*\*: Molar mass of a substance if 0.4 mole = 25.0g?

\*\*Options\*\*: A. 6.3g B. 40.0g C. 62.5g D. 2.5g

\*\*Answer\*\*: C

25. \*\*Question\*\*: Correct separation order for sand, NH₄Cl, and NaCl is...

\*\*Options\*\*: A. Sublimation → Dissolution → Filtration → Evaporation

B. Dissolution → Dryness → Filtration → Evaporation

C. Filtration → Sublimation → Evaporation → Dryness

D. Dissolution → Filtration → Sublimation → Evaporation

\*\*Answer\*\*: A

26. \*\*Question\*\*: Volume of CO₂ at STP from 16.8g NaHCO₃ decomposition?

\*\*Options\*\*: A. 22.40dm³ B. 11.20dm³ C. 2.24dm³ D. 1.12dm³

\*\*Answer\*\*: C

27. \*\*Question\*\*: If 300cm³ gas at 800mmHg has its pressure reduced to 650mmHg, new volume is...

\*\*Options\*\*: A. 243.75cm³ B. 369.23cm³ C. 738.46cm³ D. 1733.36cm³

\*\*Answer\*\*: B

28. \*\*Question\*\*: Diffusion is slowest in solids because...

\*\*Options\*\*: A. solids have more kinetic energy B. solids have less kinetic energy C. solid particles move freely D. solid particles are far apart.

\*\*Answer\*\*: B

29. \*\*Question\*\*: Experiment showing atoms have a nucleus was done by...

\*\*Options\*\*: A. Moseley B. Rutherford C. Millikan D. Dalton

\*\*Answer\*\*: B

30. \*\*Question\*\*: Chemical properties of element X depend on...

\*\*Options\*\*: A. Y B. Z C. Y - Z D. Z - Y

\*\*Answer\*\*: B

31. \*\*Question\*\*: Gas protecting against solar radiation is...

\*\*Options\*\*: A. chlorine B. ozone C. CO₂ D. H₂S.

\*\*Answer\*\*: B

32. \*\*Question\*\*: Allotrope of carbon in lead pencils is...

\*\*Options\*\*: A. graphite B. diamond C. lampblack D. soot.

\*\*Answer\*\*: A

33. \*\*Question\*\*: Most metallic character?

\*\*Options\*\*: A. Zinc B. Copper C. Barium D. Calcium

\*\*Answer\*\*: C

34. \*\*Question\*\*: Cu dissolves in HNO₃ to produce...

\*\*Options\*\*: A. CO₂ B. SO₂ C. NO₂ D. CO

\*\*Answer\*\*: C

35. \*\*Question\*\*: Iron best for welding and nails is...

\*\*Options\*\*: A. pig iron B. wrought iron C. cast iron D. iron pyrites.

\*\*Answer\*\*: B

36. \*\*Question\*\*: Boiling point order: C₃H₇OH, C₆H₁₀, C₇H₁₆

\*\*Options\*\*: A. C₇H₁₆ → C₃H₇OH → C₆H₁₀ B. C₆H₁₀ → C₃H₇OH → C₇H₁₆ C. C₃H₇OH → C₆H₁₀ → C₇H₁₆ D. C₆H₁₀ → C₇H₁₆ → C₃H₇OH

\*\*Answer\*\*: D

37. \*\*Question\*\*: Major use of alkanes?

\*\*Options\*\*: A. Textiles B. Plastics C. Fuels D. Hydrogenation.

\*\*Answer\*\*: C

38. \*\*Question\*\*: Haloalkanes used in dry-cleaning are...

\*\*Options\*\*: A. trichloroethene and tetrachloroethene B. chloroethane and dichloroethene C. trichloromethane and tetrachloromethane D. chloroethene and dichloroethene.

\*\*Answer\*\*: A

39. \*\*Question\*\*: Compound giving orange-red flame color likely contains...

\*\*Options\*\*: A. Fe B. Fe C. Na D. Ca

\*\*Answer\*\*: D

40. \*\*Question\*\*: Stainless steel is used for...

\*\*Options\*\*: A. coins B. clock parts C. magnets D. tools.

\*\*Answer\*\*: D

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### \*\*Questions with Diagrams\*\*:

- \*\*Question 6\*\*: Structural formula for dehydration reaction.

- \*\*Question 20\*\*: Electrolysis reaction description.

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