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2024



EDUCATIONAL ASSESSMENT AND EXAMINATIONS SERVICE
CHEMISTRY PILOT TEST
HAMILE 2015 EC (JULAY 2023 GC)

BOOKLET CODE: 029

Number of Item: 80

SUBJECT CODE: 05

TIME ALLOWED 1:30 HOURS

1. Which of the following is **CORRECT** regarding the modern atomic theory?

- A. Atoms are indivisible and indestructible.
- B. Atoms of a given element are identical in mass number.
- ☒ C. Atoms of a given element have identical chemical properties.
- D. Atoms can be created or destroyed during ordinary chemical reactions.

2. The number of protons and electrons in a neutral atom of iron with atomic number of 26 and mass number of 56 is?

- A. 26 and 56
- B. 26 and 30

- C. 26 and 26
- D. 26 and 82

3. The element Tl (thallium) exists naturally as 30% thallium-203 and the rest 70% as thallium-205. Which of the following is the atomic mass of Tl?

- A. 203.0
- ☒ B. 204.4

- C. 204.0
- D. 205.0

4. Which of the following is **CORRECT** about groups in the periodic table?

- A. Groups are the horizontal rows of elements in the modern periodic table.
- B. The outer most shell electrons are identical for elements in the same group.
- C. The number of shells is the same for elements in the same group.
- D. The chemical properties can be different for elements in the same group.

SUBJECT CODE: 05

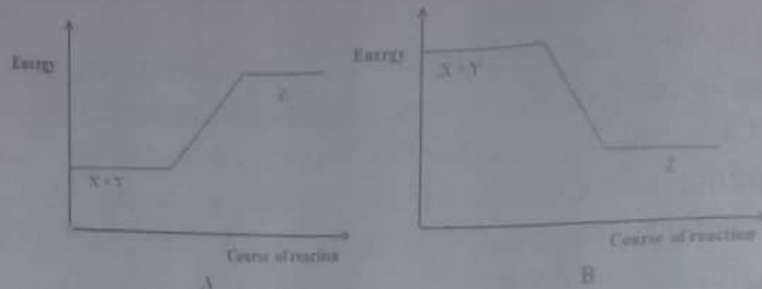
-
- Li Be B C N O F Ne

- 28 107 28

9. Which of the following illustrates the law of definite proportions?
- ☒ A. All forms of pure water are represented by the ratio 1.0 to 8.0 by mass of hydrogen to oxygen.
 - ☐ B. When 80 g of mercury (II) oxide decomposes by heat then the total mass of mercury and oxygen produced after decomposition is 80 g.
 - ☐ C. In CO_2 and CO , the masses of oxygen in the two compounds that combine with carbon are in simple whole number ratio, of 2:1.
 - ☐ D. A chemical reaction between 8 g of hydrogen and 64 g of oxygen produces 72 g of water.
10. Which of the following describes an endothermic reaction?
- ☐ A. A chemical reaction which absorbs heat energy from the surroundings
 - ☐ B. The energy of the product is less than the energy of the reactants.
 - ☐ C. Enthalpy of the system decreases through the system of reaction.
 - ☐ D. Energy of the reactants can be equal to the energy of the products.
11. Which of the following describes an exothermic reaction?
- ☐ A. ΔH is positive
 - ☐ B. H_{products} is less than $H_{\text{reactants}}$
 - ☒ C. Enthalpy of the system increases
 - ☐ D. $\text{Reactants} + \text{Heat} \rightarrow \text{products}$
12. Based on the Le Châtelier's principle, which one of the following is **TRUE** about the following reaction: $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$, $\Delta H = \text{negative}$
- ☐ A. If the temperature is increased, the equilibrium will shift to the right.
 - ☐ B. Increasing the pressure shifts the equilibrium in the reverse direction.
 - ☒ C. High yield of the product ammonia is produced by increasing the temperature.
 - ☐ D. If the concentration of H_2 is decreased, the equilibrium shifts in the reverse direction.

BOOKLET CODE: 029

13. Which of the following diagrams A and B is **CORRECT** about the endothermic and exothermic reactions?



- A. The change in enthalpy is negative in diagram A.
B. The change in enthalpy is positive in diagram B.
C. Heat flows to the system when X and Y react to produce Z in diagram B.
D. Heat energy is liberated when X and Y react to produce Z in diagram B.
14. Which of the following is **TRUE** about the oxidation number rules? The oxidation number of:
- A. the polyatomic element O_3 is 3
B. hydrogen in metal hydrides is +1
C. oxygen in superoxide is $-1/2$
D. oxygen in Na_2O_2 is -2
15. Which of the following is **CORRECT** about the rate of reaction?
- A. The higher surface area of reactants results in a slower rate of reaction when reactants are in different phases.
B. The higher the concentration of the reacting particles results in slower rate of reaction.
C. The rate of burning with oxygen decreases as the concentration of oxygen increases.
D. An increase in temperature increases the number of effective collisions between the reacting particles.

16. Which of the following is **CORRECT** about Boyle's law?

- A. The volume of a fixed mass of gas at constant pressure varies directly with the Kelvin temperature.
- B. The volume of a fixed mass of gas is inversely proportional to the Kelvin temperature at a constant pressure.
- C. The volume of a fixed mass of gas is inversely proportional to pressure at a constant temperature.
- D. The temperature of a fixed mass of gas is inversely proportional to pressure at a constant volume.

17. A sample of unknown gas occupies a volume of 5.0 L at 117 °K. Assuming that the pressure remains constant, what temperature in °K, is needed to reduce the volume to 2.5 L?

- A. -450 °K
- B. 225 °K
- C. -177 °K
- D. -195 °K

18. A volume of carbon dioxide gas collected at 25°C and 1.0 atm pressure is equal to 20 L. What would be the volume of carbon dioxide collected at 25°C and 0.80 atm?

- A. 20 L
- B. 25 L
- C. 40 L
- D. 50 L

19. Which one of the following describes the term aromatic hydrocarbon?

- A. Saturated hydrocarbons with pleasant aroma or fragrances.
- B. Hydrocarbons characterized by a benzene ring or related structures.
- C. Unsaturated hydrocarbons with homologous series of C_nH_{2n+1} .
- D. Unsaturated hydrocarbons with a triple bond as their functional group.

20. What type of monohydric alcohol is 2-methyl-2-propanol?

- A. Primary
- B. Secondary
- C. Tertiary
- D. Quaternary

BOOKLET CODE: 029

21. Which of the following is the general laboratory method for the preparation of alcohols?
- A. Hydrolysis of esters
B. Oxidation of aldehyde
C. Hydrogenation of alkenes
D. Oxidation of ketones
22. What is the name of the aldehyde with the structure of $\text{CH}_3(\text{CH}_2)_6\text{CHO}$?
- A. Propanal
B. Pentanal
C. Heptanal
D. Octanal
23. Which one of the following chemicals can be applied as a herbicide?
- A. Potash
B. Potassium nitrate
C. Urea
D. Sodium chlorate
24. Which one of the following represents the general structural formula of carboxylic acids?
- A. RCH_2OH
B. RCOOH
C. RCOOR
D. RCHO
25. Which of the following is an amphoteric oxide?
- A. Li_2O
B. MgO
C. Al_2O_3
D. CO_2
26. Which of the following is a general property of acids?
- A. Most concentrated acids are slippery.
B. Acids react with active metals to form salt and water.
C. An aqueous acidic solution turns colorless phenolphthalein to red.
D. Acids can react with carbonates to form salt, water and carbon dioxide gas.

27. Which of the following is **CORRECT** about the pH scale?
- A. Weak acids have a pH value slightly greater than 7.
 - B. As the pH value increases basicity also increases.
 - C. Basic solutions have pH values less than 7.
 - D. As the acidity decreases the pH value also decreases.
28. Which one among the following compounds is peroxide?
- A. CaO_2
 - B. MgO
 - C. PbO_2
 - D. ZnO
29. Among the given pairs, which one of the following substances represents strong and weak electrolytes, respectively?
- A. NaCl (aq) and $\text{BaSO}_4 \text{ (aq)}$
 - B. HCl (aq) and $\text{HNO}_3 \text{ (aq)}$
 - C. AgCl (aq) and $\text{CaCO}_3 \text{ (aq)}$
 - D. $\text{HClO}_4 \text{ (aq)}$ and NaOH (aq)
30. Which of the following natural resources is renewable?
- A. Water
 - B. Petroleum
 - C. Coal
 - D. Natural gas
31. Which of the following is **NOT CORRECT** about the extraction of copper?
- A. Blister copper contains no impurities.
 - B. The sulfide ores are usually concentrated by froth flotation.
 - C. The formation of molten slag removes many of the impurities.
 - D. Copper obtained by electrolytic refining is almost 100% pure.
32. Which of the following methods of food and preservation is **NOT CORRECT**?
- A. Pickling
 - B. Salting
 - C. Washing
 - D. Smoking

33. One of the following is the **CORRECT** application of minerals in industry
- A. Chlorine can be used in food packaging to prevent oxidation.
 - B. Wrought iron is used in making nails, sheets, farm machinery etc.
 - C. Alloy of aluminum can be used to make coins, medals, bells, etc.
 - D. Copper is used to make door and window frames and roofing for buildings.
34. A student visiting a nearby cement factory presented a report about the cement and the raw materials used for the production of cement. Which one **CANNOT** be the main raw materials used in a cement manufacturing process?
- A. Calcium oxide
 - B. Aluminum oxide
 - C. Iron(III) oxide
 - D. Barium titanate
35. For what purpose is the tanning process carried out during leather production from skins and hides?
- A. Coloring the leather
 - B. Removing hairs by chemicals
 - C. Making the leather a flexible material
 - D. Polishing to make it look attractive
36. Which method can decrease the pollution of water?
- A. Replacing organic fertilizers by phosphate and nitrate fertilizers.
 - B. Increasing the use of insecticides and pesticides.
 - C. Causing a pH change in the water.
 - D. Avoiding unnatural temperature changes in natural water systems.

37. Which of the following is **CORRECT** about precision and accuracy?
- A. Measurements with high precision should be of high accuracy.
 - B. Accuracy refers to the agreement between measured individual values to each other.
 - C. Precision is the closeness of individual measurements to the correct value.
 - D. Precision and accuracy are terms used to express uncertainties in measurement.
38. Which one of the following **DOES NOT** belong to the experimental skills in chemistry?
- A. Testing of hypothesis
 - B. Planning experimental activities
 - C. Implementing experimental works
 - D. Evaluating evidence and procedures
39. Bromine has two naturally occurring isotopic elements: 50.54 % of ^{79}Br and 49.46% of ^{81}Br . What will be the average atomic mass of bromine?
- A. 79
 - B. 80
 - C. 81
 - D. 82
40. Which of the following statements explains the Aufbau Principle?
- A. Degenerate orbitals are each occupied by a single electron before the second electron of opposite spin enters the orbital.
 - B. No two electrons can have the same four quantum numbers, i.e. they must differ in at least one of the four quantum numbers.
 - C. Electrons occupy the lowest-energy orbital available before entering the higher energy orbital.
 - D. Equal energy orbitals are each occupied by a single electron before the second electron of opposite spin enters the orbital.

41. Which one of the following defines atomic mass of an element?
- A. The sum of the individual mass of the atoms in an element.
 - B. The mass of an atom with the higher percent of an element.
 - C. The mass of an atom with lower percent of an element.
 - D. The average mass of atoms in an element.
42. The element copper (with the average atomic mass of 63.546) contains two isotopes: ^{63}Cu (mass = 62.9298 and ^{65}Cu (mass = 64.9278). What percent of a Cu atom is ^{65}Cu ?
- A. 69.09
 - B. 23.70
 - C. 30.95
 - D. 72.30
43. Uncertainties always exist in measured quantities. Which one of the following is **NOT** the cause for uncertainties?
- A. Person errors
 - B. Environmental factors
 - C. Problems associated to the measuring devices
 - D. Physical state of the item being measured
44. Which one of the following is **CORRECT** about the three elements: Ra, Ac, and Au? ($Z=\text{Ra}=88, \text{Ac}=89, \text{Au}=79$) The elements belong to
- A. representative, transition and inner-transition, respectively
 - B. representative, inner-transition and transition, respectively
 - C. transition, representative and inner-transition, respectively
 - D. transition, inner-transition and representative, respectively
45. Using VSEPR model, determine the shapes of the following molecules: CO_2 , SF_2 , PCl_3 and COCl_2
- A. Linear, V-shape, Trigonal pyramidal and Trigonal planar, respectively
 - B. Trigonal planar, Linear, V-shape and Trigonal pyramidal, respectively
 - C. Trigonal pyramidal, Linear Trigonal, planar and V-shape, respectively
 - D. V-shape, Trigonal planar, Trigonal pyramidal and Linear, respectively

46. Which of the following is **CORRECT** about bond strength and/or bond length?
- A. The bond strength of double bond is approximately twice as strong as a single bond.
 - B. The bond length of a double bond is approximately equal to a triple bond.
 - C. The extent of overlap has less effect on bond strength and length.
 - D. The bond strength of a triple bond is approximately equal to a double bond.
47. For the decomposition of ammonium chloride, $\text{NH}_4\text{Cl (s)} \leftrightarrow \text{NH}_3 \text{ (g)} + \text{HCl (g)}$, which one is the **CORRECT** equilibrium constant expression for the reaction?
- A. $K_p = (P_{\text{NH}_3})(P_{\text{HCl}}) / P_{\text{NH}_4\text{Cl}}$
 - B. $K_p = (P_{\text{NH}_3})(P_{\text{HCl}})$
 - C. $K_p = P_{\text{NH}_4\text{Cl}} / (P_{\text{NH}_3})(P_{\text{HCl}})$
 - D. $K_p = (P_{\text{NH}_3}) / (P_{\text{HCl}})$
48. Which of the following is **CORRECT** about equilibrium constant?
- A. The concentrations of all the products are written in the denominator.
 - B. The concentrations of all the reactants are written in the numerator.
 - C. Each concentration term is raised to the power by its respective coefficient as written in the balanced chemical reaction.
 - D. The concentration terms are multiplied by their respective coefficient as written in the balanced chemical reaction.
49. Which of the following is **TRUE** when a chemical system is in equilibrium?
- The rate of the
- A. forward reaction depends upon the concentration of reactants.
 - B. reverse reaction depends upon the concentration of products.
 - C. forward reaction depends upon the concentration of products.
 - D. forward reaction becomes equal to the rate of reverse reaction.

50. Determine whether the formation of product or reactants is favoured for the following reaction at equilibrium $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$, $K_c = 3.6 \times 10^8$
- A. The product is favoured
 - B. The reactants are favoured
 - C. Both the product and the reactants are equally favoured
 - D. Neither the product nor the reactants are favoured
51. Which one of the following yields acetic acid in the laboratory?
- A. By the oxidation of ethanol with potassium permanganate.
 - B. By passing the vapors of ethanol through copper metal.
 - C. By the oxidation of acetaldehyde with sodium dichromate.
 - D. By the reaction of ethanol with carboxylic acid.
52. The process of converting oils to hard fats is known as hardening of oils. Which of the following reaction causes hardening of oils?
- A. Alkylation
 - B. Esterification
 - C. Oxidation
 - D. Hydrogenation
53. Which one of the following is **CORRECT** about the three states of matter and their phase changes?
- A. At very high temperatures, molecules possess large kinetic energy and hence, the substance has neither a definite shape nor a definite volume.
 - B. At very low temperatures, molecules possess low forces of attraction and hence, the substance has definite shape and volume.
 - C. At intermediate temperatures the kinetic energy and forces of attraction are almost equal and therefore, the substance exists in all the three states.
 - D. If kinetic energy is approximately equal to the forces of attraction, the substance has neither a definite volume nor a definite shape.

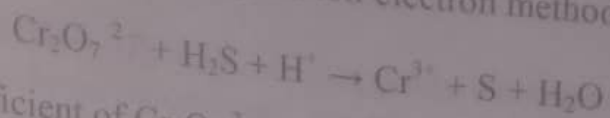
54. One among the following is TRUE about optimum conditions, for a reaction in equilibrium:
- A. When $\Delta n < 0$, the decrease in pressure favours the formation of products.
 - B. When $\Delta n > 0$, the increase in pressure favours the formation of products.
 - C. For endothermic reactions the yield of products is increased by performing the reaction at lower temperatures.
 - D. Adding reactants to the reaction vessel shifts the equilibrium reaction in the forward direction.
55. Which one of the following explains the characteristics of chemical equilibrium?
- A. The macroscopic properties like temperature, pressure, volume and concentration change with time.
 - B. When reaction proceeds, the concentrations of the reactants and products are generally equal.
 - C. During reactions, reactants and products are neither added nor removed from the reaction in a closed vessel.
 - D. The free energy change of reactions is different from zero at equilibrium.
56. What is name and molecular formula of saturated monocarboxylic acid with the structure $\text{CH}_3(\text{CH}_2)_4\text{COOH}$?
- | | |
|--|--|
| A. Hexanedioic acid, $\text{C}_6\text{H}_{12}\text{O}_2$ | C. Propanedioic acid, $\text{C}_3\text{H}_4\text{O}_2$ |
| B. Propanoic acid, $\text{C}_3\text{H}_6\text{O}_2$ | D. Hexanoic acid, $\text{C}_6\text{H}_{12}\text{O}_2$ |
57. Which of the following defines solubility of solute?
- A. The amount of solute that dissolves in a given quantity of a solvent.
 - B. The ratio of the mass of solute to the mass of the solution.
 - C. The number of moles of solute in 1 L of solution.
 - D. The ratio of the number of moles of solute divided by the total number of moles of a solution.

58. Which one of the following can give you a supersaturated solution of sodium thiosulphate ($\text{Na}_2\text{S}_2\text{O}_3$)?
- A. Heating a saturated solution of $\text{Na}_2\text{S}_2\text{O}_3$ so that extra amount of solute dissolves.
 - B. Adding some solute of $\text{Na}_2\text{S}_2\text{O}_3$ into the water using spatula and stir until it dissolves.
 - C. Adding more and more solute of $\text{Na}_2\text{S}_2\text{O}_3$ into a saturated solution of $\text{Na}_2\text{S}_2\text{O}_3$.
 - D. It is not possible to prepare a supersaturated solution of $\text{Na}_2\text{S}_2\text{O}_3$.
59. Which one of the following explains the equilibrium nature of saturated solution?
- A. Though dissolution and crystallization continue in a saturated solution there is further change in the concentration over time.
 - B. There is excess un-dissolved solute in equilibrium with the dissolved solute.
 - C. Solution in which the dissolved and undissolved solutes are in dynamic equilibrium.
 - D. The rate of dissolution is greater than the rate of crystallization.
60. What is the molality of a solution prepared by dissolving 40 g of NaOH in 200 g of water? Molar mass of NaOH = 40 g/mol
- A. 5.0
 - B. 0.5
 - C. 2.0
 - D. 0.2
61. Calculate the osmotic pressure, in atm, at 27°C of 150 mL aqueous solution containing 7.0 g of sucrose ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) per 600 mL of solution? The ideal gas constant (R) = 0.0821 Latm/molK, molecular mass of sucrose = 342 g/mol
- A. 0.84
 - B. 0.81
 - C. 6.68
 - D. 0.15

62. Which of the following is **CORRECT** about heat of solution and the inter particle interaction forces? If the solute-solvent
- A. attraction is stronger than the solvent-solvent and the solute-solute attraction, then $\Delta H_{\text{sol}}^{\circ} > 0$.
 - B. attraction is stronger than both the solvent-solvent and the solute-solute attraction, the solution process is favourable.
 - C. interaction is weaker than the solvent-solvent and solute-solute interactions, then the solution process is exothermic.
 - D. interaction is weaker than the solvent-solvent and solute-solute interactions, then $\Delta H_{\text{sol}}^{\circ} < 0$.
63. What is the boiling point of a solution that contains 100 g of sucrose ($\text{C}_{12}\text{H}_{22}\text{O}_{11}$) in 250 mL of water? Molal boiling point elevation constant (K_b) for $\text{H}_2\text{O} = 0.512^{\circ}\text{C}/\text{m}$ and Molar mass of $\text{C}_{12}\text{H}_{22}\text{O}_{11} = 342 \text{ g/mol}$
- A. 100.9
 - B. 100.8
 - C. 100.2
 - D. 100.6
64. Which of the following defines an Arrhenius base?
- A. Compound that contains the (hydroxide ions) OH^- can be classified as Arrhenius base.
 - B. Compound that can accept proton is an Arrhenius base.
 - C. Species that have an empty orbital to accommodate an electron pair.
 - D. Species that have lone-pair of electrons to donate for electron-deficient species.

65. Which of the following is **CORRECT** about the effect of temperature on K_w ?
- A. In pure water, the concentrations of H^+ and OH^- ions are equal and $K_w = 1.0 \times 10^{-14}$ at $25^\circ C$.
 - B. In pure water, K_w is the same regardless of temperature changes.
 - C. The product of $[H^+]$ and $[OH^-]$ must always equal to $K_w = 1.0 \times 10^{-14}$ at different temperatures.
 - D. K_w decreases as temperature increases and the concentrations of H^+ and OH^- ions remains equal.
66. Calculate the OH^- and pOH of the basic NH_3 solution if the initial concentration of the solution is 0.01 M and K_b is 1.8×10^{-5} .
- A. $[OH^-] = 4.2 \times 10^{-4}$, $pOH = 3.4$
 - B. $[OH^-] = 2.4 \times 10^{-10}$, $pOH = 9.6$
 - C. $[OH^-] = 2.4 \times 10^{-5}$, $pOH = 9.6$
 - D. $[OH^-] = 4.2 \times 10^{-10}$, $pOH = 4.4$
67. A solution of $NaOH$ is made by dissolving 40.0 g of the base in enough water to produce a 500.0 mL solution. Determine the normality of the solution.
- A. 0.5
 - B. 2.0
 - C. 1.0
 - D. 4.0
68. Which one of the following explains the technique titration?
- A. A solution of an analyte is used to determine the concentration of another unknown solution.
 - B. A compound of known mass is used to determine the mass of another compound of interest.
 - C. A solution of titrant is used to determine the volume of an unknown solution.
 - D. A solution of known concentration is used to determine the concentration of an unknown solution.

69. Which one is **CORRECT** regarding the coefficients of the following overall reaction if you balance using the ion-electron method in acidic solution?



- A. Coefficient of $\text{Cr}_2\text{O}_7^{2-}$ is 2
B. Coefficient of Cr^{3+} is 7
C. Coefficient of H_2S is 3
D. Coefficient of H^+ is 4

70. If you have an electrolytic cell containing dilute NaCl solution with two inert graphite electrodes as anode and cathode, which one of the following is **TRUE** about the electrolytic cell?

- A. Cl^- and OH^- ions migrate towards the cathode
B. Cl^- ions are discharged at the anode in preference to the OH^- ions
C. The Na^+ ions are discharged in preference to H^+ the ions
D. The electrolysis results in the preparation of O_2 and H_2 gases

71. Calculate the mass of copper and volume of oxygen that would be produced by passing a current of 1.0 A through a CuSO_4 solution between Pt electrodes for 1 hour. Molar mass of copper is 63.5, $F = 96,500 \text{ C.mol}^{-1}$

- A. 1.18
B. 2.36
C. 0.59
D. 0.02

72. Which of the following is **CORRECT** about the production of metals by electrolysis?

- A. At the cathode, the Cu^{2+} ions are discharged in preference to the H^+ ions from the electrolysis of copper (II) sulphate using inert electrodes.
B. During electrolysis, cryolite (Na_3AlF_6) is added to molten Al_2O_3 to enhance electrical conductivity and to increase the melting point.
C. Many metals are extracted by the electrolysis of anhydrous molten sulphides.
D. Among different methods, electrolytic reduction is suitable for less electropositive metals.

BOOKLET CODE: 029

73. Which of the following occurs during the operation of hydrogen-oxygen fuel cells?
- A. The overall reaction taking place is $2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{H}_2(\text{g}) + \text{O}_2(\text{aq})$.
 - B. The cell requires an external continuous supply of hydrogen and oxygen.
 - C. The hydrogen gas is bubbled through the cathode compartment.
 - D. The oxygen gas is bubbled through the anode compartment.
74. Which one of the following is **TRUE** regarding corrosion?
- A. Rust deposition of iron ($\text{Fe}_2\text{O}_3 \cdot x\text{H}_2\text{O}$) takes place at the anode.
 - B. It is very destructive if the oxidation process of metals is inhibited.
 - C. Formation of a hydrated form of Al_2O_3 on the surface of aluminum is the cause for corrosion of the metal.
 - D. Iron rusts much more than magnesium metal as magnesium can form protective oxide coat.
75. Which one of the following describes the uses of sodium?
- A. Sodium is used for the production of Na pipes.
 - B. Sodium is used to oxidize TiCl_4 and ZnCl_2 to the metals.
 - C. Liquid sodium metal is used as a coolant in nuclear reactors.
 - D. Sodium is used to make a Na/Pb alloy as an additive to petrol.
76. Which one of the following is **CORRECT** about monomer and polymers?
- A. Polymers are micro molecules made from smaller repeating units called monomers.
 - B. Polymers are the building blocks of monomers.
 - C. Homopolymers are made from different types of monomers.
 - D. Polyethylene is polymer synthesized by the polymerization of ethylene.

77. Which of the following explains how condensation polymerization takes place?
- A. To produce a condensation polymer, the monomers involved must have two or more functional groups.
 - B. Condensation polymerization doesn't involve the combination of monomer molecules with the elimination of simple molecules.
 - C. Condensation polymerization requires a large number of monomer molecules which can be polymerized by addition reactions.
 - D. Condensation polymer can be produced from monomers having only one functional group.
78. Which of the following polymer is formed by condensation polymerization?
- A. Polytetrafluoroethylene (Teflon)
 - B. Polyvinyl chloride (PVC)
 - C. Polyethylene
 - D. Polyethylene terephthalate (Dacron)
79. Which of the following explains how proteins are formed?
- A. Proteins are formed by addition polymers.
 - B. NH_3 molecule is mostly expelled in the synthesis of protein.
 - C. Amino acids are joined together through amide bonds in proteins.
 - D. Proteins can contain less than 10 amino acid units.
80. Which one of the following is **TRUE** about the structure of amino acids in proteins?
- A. The amino group found in protein is attached to the carbonyl group.
 - B. The nature of the amino group distinguishes α -amino acids from each other.
 - C. An amino acid always contains both an amino group and a carboxyl group.
 - D. Nonpolar amino acids contain one amino group, one carboxyl group, and a polar side chain.