South West Academy
Grade 8 Chemistry

work Book

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BASED ON 2004-2008E.C

NATONAL EXAMINATION

1. Which of the following statements best describes the concern of chemistry?
    A. It deals with the production of new materials
    B. It deals with improving the quality of life
    C. It deals with the most economic way of utilizing natural resources
    D. All of the above
2. Among the basic concerns of chemistry the one that deals with qualitative and quantitative determination of a sample is
    A. Property B. Composition C. Transformation D. Structure
3, Which of the following shows the close relationship between biology and chemistry?
    A. Chemistry and biology are concerned with inanimate matter
    B. Chemistry and biology are concerned with matter and energy
    C. Chemistry aids biology by dealing with the structure of proteins
    D. Discoveries in chemistry have found uses in space technology
3. Chemists recycle a used can rather than throwing it away because chemistry is concerned with
    A. Investigation of natural phenomena
    B. Economical utilization of natural resources
    C. The discipline of measurement
    D. The functioning of measurement of living organisms
5. Which of the following shows the essence of chemistry as a science concerned with economical utilization of natural resources?
    A. production of food stuffs C. Recycling materials
    B. making medicines D. Synthesis of rubber
6. Which of the following chemical plants is found in Addis Ababa?
    A. Soda ash factory B. paints factory C. Aluminum sulfate D. sulfuric acid factory
7. Specific aspects of matter and their composition is studied in
    A. physics B. Biology C. Chemistry D. mathematics
8. Which of the following statements is true about chemistry? Chemistry is :
    A. a science dealing with general aspects of matter and energy
    B. a science concerned with the study of living things
    C. the study of the nature and behavior of substances
    D. unrelated with the other branches of science
9. Which one of the following industries is a chemical industry?
    A. ‘Chora” gas factory C. ’Birhan and Selam’ printing press
    B. ‘Bishoftu’ Car Assembly D. ‘Saint Paul’ Referral Hospital
10. The knowledge of chemistry is applied in agriculture in the process of production of:
    A. Dyes B. Beverages C. Rubber D. Herbicides
11. A branch of natural science which studies the chemical composition, structure and reaction of compounds found in living organisms is called_____.
    A. Organic chemistry C. Biochemistry
    B. Inorganic chemistry D. Physical chemistry
12. In Ethiopia, sulphuric acid is produced in:
    A. Awash Melkasa B. Zeway C. Addis Ababa D. Bulbula

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13. Chemicals that are applied on agriculture lands to remove unwanted plants or weeds are called_____.
    A. Detergents B. Herbicides C. Pesticides D. Cosmetics
14. Which of the following chemical industries in Ethiopia mainly serves for cleaning purposes?
    A. Cement B. Paint C. Detergent D. Agrochemical
15. Which of the following classification of physical properties and their corresponding examples are correct?
    A. Physical states of substances –Example odor, color, texture taste
    B. Physical states recognized by our sense organs – Example : Density , Melting point, solubility
    C. Physical properties with constant values – example : solids, Liquids, Gases
    D. None of the above
16. Which of the following processes best explains ka physical change?
    A. Grinding salt B. Photosynthesis C. Rusting of zinc D. Burning of sugar
17. Which of the following action is a chemical change ?
    A. Dissolution of sodium chloride in water C. Boiling of alcohol
    B. Burning of carbon D. Mixing of sugar with wheat
18. Which of the following distinction regarding physical and chemical changes is correct?
    A. Physical change is where new substance is formed and difficult to reverse
    B. A chemical change is where heat change is small and new substance is formed
    C. Physical change is where there is no change in mass and the change is easily reversible
    D. Chemical change is where there is large heat change involved and where the change is easily reversible
19. What can you say about the components of a mixture?
    A. Components separated by chemical means
    B. Components retain their own properties
    C. Components combined in an definite ratio
    D. Components when they mixed give out heat or light energy
20. A mixture that has uniform composition and properties throughout is
    A. Heterogeneous B. Pure substance C. Compound D. Homogeneous
21. Which of the following groups of elements are metalloids?
    A. Sn, Pb, Hg B. P, S, Cl C. Be, Ge, Sb D. Li, Be, Al
22. Separatory funnel is used to separate mixtures of
    A. Oil and water C. Sand and sugar
    B. Alcohol and water D. Iron and Gold
23. Identify the heterogeneous mixture among the following:
    A. Sea water B. Blood C. Bronze D. Air
24. Distillation is used in the process of preparation of :
    A. Coffee B.”Tella C. “Araki” D. Honey

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25. Grade 8 students in a certain school were given the task of separating iron filings sand and salt. Which of the following process is the most appropriate order?
    A. Evaporation → Dissolution → Filtration Magnetic separation
    B. Dissolution → Magnetic separation → Filtration Evaporation
    C. Magnetic separation → Dissolution → Filtration Evaporation
    D. Magnetic separation → Evaporation → Dissolution Filtration

26. The physical constants of a substance 'X' are given in the table below

Table 1 physical constants of 'X'

Physical properties	Constant
1. Melting point	1530^0c
2. Solubility in water	Insolubel
3. Density	7.86g/cm^3
4. Boiling point	3000^0c

Substance 'X ' is likely to be:
A. Sodium chloride B. Iron C. Benzene D. Water

27. Which of the following is an example of chemical change?
    A. Heating candle wax C. Evaporation of sea water
    B. Grinding rock salt D. Souring milk

28. A mixture of insoluble solid and a liquid is called____.
    A. Suspension B. Solution C. Solvent D. Solute

29. What is the mass of 200 cm^2 of aluminum if the density of aluminum is 2.7/cm^3?
    A. 270g B. 540g C. 600g D. 810g

30. The conversion of a gas directly to a solid is called _____.
    A. freezing B. melting C. deposition D. Sublimation

31. Unlike homogenous mixtures, heterogeneous mixtures:
    A. have uniform distribution of components throughout
    B. consist of components that can be seen with naked eyes or microscope
    C. consist of only one phase
    D. have components that can be separated only by chemical means

32. Which of one the following industrial processes uses fractional distillation?
    A. Separating iron and steel from glass and plastic
    B. Large scale production of common salt
    C. production of drugs like penicillin
    D. production of fuels such as petrol and diesel oi

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33. A mixture of cyclohexane, toluene, ethyl alcohol and water is to be separated. The boiling of the liquids are given in the
table below which component is vaporized first?

Substance	**Boiling point in^{0}c**
Cyclohexane	810c
Water	1000c
Toluene	1110c
Ethyl alcohol	780c

A. Ethyl alcohol B. Toluene C. water D. cyclohexane

34. What is the formula of copper (II) nitrate?

A. $CUNO_3$ B. $CU(NO_3)_2$ C. $CUNO_2$ D. $CU(NO_2)_2$

35. Which of the following statements describes a chemical property?

A. Mercury has silvery colour
B. Oil floats over water
C. Iron corrodes in moist places
D. Table salts melt at 801^{0}c

36. The solubility curve of three salts is given below



Temperature in 0c

Fig. 1. Solubility curves of different substances

37. Which of the following statements is true ?

A. Solubility of NaCl is higher at 50^{0}c than at 40^0 c
B. Solubility of cerium sulfate is higher at 20^0 c than at 40^{0}c
C. Solubility of potassium nitrate is higher at 10^0 c than at 40^{0}c
D. Solubility of sodium chlorine is higher at 10^0 c than at 30^{0}c

38. Two immiscible liquids can be separated by using:

A. Filter paper B. Magnets C. distillation apparatus D. separatory funnel

39. Which letter represents deposition in the figure below?

F

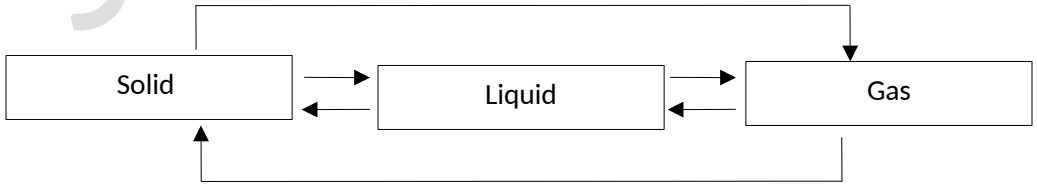


Figure 2. phase transitions

A. E B. D C. C D. B

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40. Which of the following physical processes can be used to separate honey from its comb?

A. Decantation B. Distillation C. Filtration D. Sedimentation

41. Which of the following is an appropriate procedure to separate NH_4Cl (sublimely) Iron filings, table salt and sand?

A. Sublimation ⟶ Magnetic separation ⟶ Dissolution ⟶ Filtration

B. Distillation ⟶ Filtration ⟶ Sublimation ⟶ Magnetic separation

C. Magnetic separation ⟶ Distillation ⟶ Sublimation ⟶ Dissolution

D. Dissolution ⟶ Filtration ⟶ Magnetic separation ⟶ Distillation

42. Which of the following is a homogenous mixture?

A. Milk B. Blood C. Dusted air D. Bronze

43. One of the following is a physical property recognized by our sense organs:

A. Boiling point B. Density C. Odor D. Melting Point

44. Which one of the following is wrong about the properties of a substance?

A. Two substances can have exactly the same set of properties

B. Properties are characteristics that give a substance its identity

C. Properties enable us to distinguish one kind of substance from another

D. No two substances have exactly the same set of properties

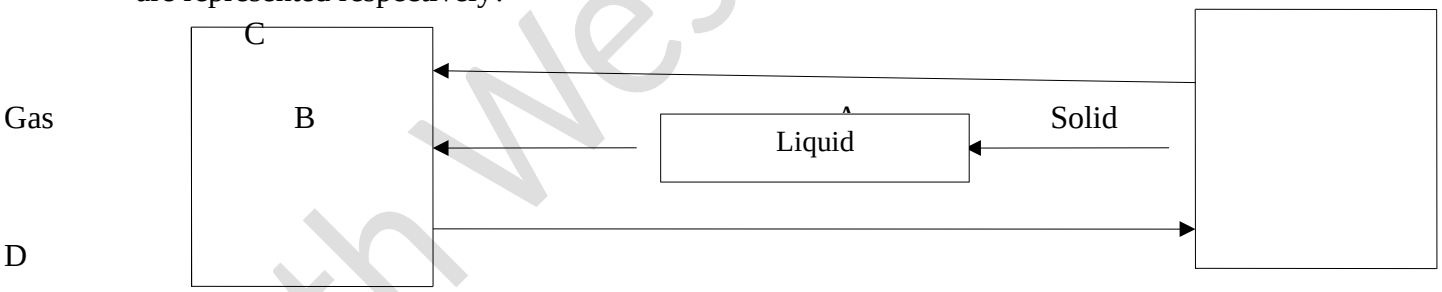
45. One of the following is **<u>Not</u>** a mechanical change?

A. Powdering B. Breaking C. Burning D. Hammering

46. What technique of separation is used to get a cup of clear coffee?

A. Decantation B. Distillation C. Crystallization D. Evapouration

47. In the figure below, in which one of the following physical processes do the letters A, B,C, and D are represented respectively?



A. Boiling, Melting, sublimation, deposition. C. Boiling, melting, deposition, sublimation

B. Melting, Boiling, deposition, sublimation. D. Melting, Boiling, sublimation, deposition

48. Elements exist in diatomic and polyatomic molecular form EXCEPT

A. Sulfur B. Ozone C. Chlorine D. Helium

49. Which of the following is NOT the correct representation of 3Na?

A. Three atoms of sodium B. Three moles of atoms of sodium

B. Three molecules of sodium D. 3 x 23 g of atoms of sodium

50. From the following drawings which one represents $3H_2$ (Let ○ Hydrogen atom)

A. B. ○○ ○○ ○○

C. ○ ○ ○ ○ ○ ○ D. All of the above drawings

51. The valence of iron (Fe) in Fe_2O_3 is ____

A. 3^- B. 2^+ C. 3^+ D. 2^-

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52. When the equation
$Fe + Cl_2 \longrightarrow FeCl_3$ is balanced the coefficient of Cl_2 is
A. 2 B. 3 C. 4 D. 6

53. The relative number of molecules of reactants and products are expressed by
A. Chemical formula B. Symbol C. Chemical equation D. word equation

54. The chemical symbol of the element Tungsten is
A. W B. Tg C. As D. Bi

55. What is the formula of Iron(III) phosphate?
A. $Fe_2(PO_4)_3$ B. $Fe\ PO_4$ C. $Fe_3\ (PO_4)_2$ D. $Fe(PO_4)_3$

56. According to the law of conservation of mass:
A. Matter can be created
B. Matter can be destroyed
C. Total mass of reactants is equal to total mass of products
D. Total mass of reactants is greater than that of Reactants

57. The formula $2O_3$ shows
A. Six separate oxygen atoms
B. Three oxygen molecules containing two atoms
C. Six oxygen molecules containing two atoms
D. Two oxygen molecules containing three atoms

58. Which of the following is terratomic?
A. Sulfur B. Phosphorous C. Oxygen D. Nitrogen

59. When the equation $Al + H_2\ SO_4 \longrightarrow Al_2\ (SO_4)_3 + H_2$ is balanced, the coefficient of $H_2\ SO_4$
A. 6 B. 5 C. 4 D. 3

60. Which of the following names of elements is derived from the Latin name of colors?
A. Strontium B. Californium C. Iodine D. Chlorine

61. The correct chemical formula of the compound composed of ammonia (NH_4^+) and phosphate (PO_4^{3}) ions is:
A. $(NH_4)_2\ (PO_4)_3$ B. $NH_4\ PO_4$ C. $NH_4\ (PO4)_3$ D. $(NH_4)_3\ PO_4$

62. The law which states that the mass of substances before and after reaction are equal is called the law of _____.
A. multiple proportions
B. conservation of mass
C. definite proportions
D. reciprocal proportions

62. In the following balanced chemical equation, what is the total number of atoms in the reactant side?
$3Cu + 8HNO_3 \longrightarrow 3Cu\ (NO_3)_2 + 2NO + 4H_2O$
A. 43 B. 24 C. 18 D. 15

63. Which of the following is the correct balanced equation for the reaction between magnesium and nitrogen ?
A. $Mg + N \longrightarrow MgN$
B. $Mg + N_2 \longrightarrow MgN_2$
C. $3Mg + N_2 \longrightarrow MG_3N_2$
D. $2Mg + 2N_2 \longrightarrow Mg_2\ N_2$

64. Kalium is the Latin name for:
A. Calcium B. potassium C. copper D. Chlorine

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65. Which One of the following is a solid diatomic element?

A. Iodine B. Chloring C. Phosphorous D. Fluorine

66. Which one of the following is the chemical formula for Ammonium phosphate?

A. NH_4PO_4 B. $(NH_3)_3Po_4$ C. $(NH_3)_4PO_4$ D. $(NH_4)_3PO_4$

67. $XA1 + YO_2 \longrightarrow Z\ A1_2O3$

When the above equation is balanced, the sum of the coefficients X,Y and Z is:

A. 12 B. 9 C. 6 D.11

68. A metallic element "X" forms an ion X^{2+} What will be the formula of the Nitrate of X?

A. XNO_3 B. $X(NO)_3$ C. X_2NO_3 D. $X(NO_3)_2$

69.The number of protons in an atom is known as:

A. Atomic number B. Valency C. Mass number D. Atomic mass

70. A particle has 11 protons, 10 electrons and 12 neutrons. What would be the correct electronic arrangement of the particle in the main energy levels?

A. 2,8,1 B. 2,8 C. 2,8,2 D. 2,8,3

71. From the following elements which one has diatomic molecules

A. Chlorine B. Sulfur C. Phosphorus D. Carbon

72. The mass number of an element is the

A. Number of protons C. Sum of the number of protons and electrons

B. number of electrons D. Sum of the number of neutrons and protons

52

73. What is the number of Neutrons in $^{24}Cr^{+3}$?

A. 23 B. 24 C. 25 D. 26

74. Which of the following is true about the structure of an atom?

A. Elements are parts of the nucles

B. Neutrons are positively charged components

C. Neutrons are the heaviest substance particles

D. Protons revolve around the nucleus

75. The electron configure of Ar (Z=18) is :

A. 2,8,8, B. 2,16 C. 2,8 D. 8,2,8

76. Which of the following is true about the historical development of atomic theory?

A. Aristotle supported the idea of the discreet nature of matter

B. Democritus beloved that matter is continuous

C. Dalton proposed that atoms are divisible

D. Modern atomic theory states that all substances are made of

77. The Greek philosopher who proposed the concept of an atom was:

A. Dalton B. Aristotle C. Robert Boyle D. Democritus

78. In all chemical reactions the total mass of the reactants is equal to that of the products. This Law is:

A. Law of constant proportion C. Law of conservation of mass

B. Law of mass action D. Law of multiple proportions

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79. How many atoms are present in (4 $NaNO_3$)?

A. 16 B.20 C. 14 D. 18

80. How many kinds of molecules are involved in the following equation?

$2C_2H_6+7O_2 \longrightarrow 4CO_2+6H_2O$

A. 21 B. 19 C. 4 D.6

81. Which one of the following is the shortcoming of Dalton's atomic theory?

A. Atoms of the same element have the same mass

B. Matter consists of very small particles called atoms

C. Atoms of one element are different from atoms of other elements in mass and other properties

D. Atoms combine in a fixed small whole number ratio to form compounds

82. Which one of the following is the lightest sub- atomic particle?

A. Proton B. Ion C. Electron D. Neutron

83. How many electrons does $A1^{3+}$ have?

A. 8 B. 10 C. 13 D. 3

84. $3H_2$ contains:

A. Three hydrogen molecules C. Two hydrogen atoms

B. Three hydrogen atoms D. Six hydrogen molecules

85. Which of the following is NOT true about modern atomic theory?

A. An element is made of atoms

B. All atoms of the same element have same number of neutrons

C. Atoms of different elements combine in small whole numbers to form compounds

D. Atoms of different elements are different because of the different number of protons

86. What would be the atomic number of atom with six valence electrons?

A. 12 B. 6 C.10 D.8

87. An atom $\underline{24}$ Mg contains:

A. 12 protons, 14 neutrons, 12 electrons C. 12 protons, 12 neutrons, 12 electrons

B. 12 protons, 6 neutrons, 6 electrons D. 6 protons, 6 neutrons, 6 electrons

88. The horizontal row of elements in the periodic table is called

A. Group B. Family C. Period D. Block

89. The statement "When elements are arranged in increasing atomic mass every eighth elements has similar properties to the first one "is known as:

A. Mendeleev's law C. Mosley's law

B. The triad law D. The law of octet

90. An element is found in group IV and period 3 of the periodic table; then the electronic configuration of the elements is:

A. 2,8,4 B. 2,8,3 C. 2,8,18,4 D. 2,8,8

91. Atoms of an element have seven valence electrons: then the element is found in ___of the periodic table.

A. period seven B. The seventh row

C. Group seven D. The seventh column

92. Which of the following is NOT useful in giving information of the periodic table?

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A. To simplify the study of properties of elements
B. To compare reactivity of the elements
C. To predict new elements
D. To indicate occurrence of the elements

93. Which of the following is among the shortcomings of Mendeleev's periodic table?
A. Elements were arranged by their atomic number
B. Some elements were not placed in their exact position
C. Gaps were left for some undiscovered elements
D. It helped the discovery of new elements

94. In the modern periodic table, properties of elements are periodic function of their:
A. Atomic mass C. Atomic size
B. Atomic number D. Mass number

95. An element has the electron configuration 2,8,7. The element is found in
A. period 3, group VIIA B. period 7, group IIIA
C. Period 2, group IA D. Period 4, group IIA

96. Element Y is a gaseous non- metal with high electron affinity and electro negativity its location in the periodic table is likely to be:
A. S – Block B. P – Block C. D- Block D. F- Block

97. Substance "X" is a hard, lustrous solid which readily conducts heat and electricity "X" is likely to be:
A. Metalloid B. Non – metal C. Salt D. Metal

98. An element 'X' reacts with a metal to form a salt. To which group of the periodic table could the element 'X' be found?
A. Group I B. Group II C. Group VII D. Group VIII

99. In sodium ion, Na+ (Atomic number No = 11) number of:
A. Electron and protons are equal
B. Protons is greater than number of electrons
C. Protons is less than number of electrons
D. electron is greater than number of neutrons

100. What is the electron configuration of silicon ? (Si = 14)
A. 2, 8, 4 B. 2, 12 C. 2, 12,2 D. 2,8,8,4

101. The collective name given to protons and neutrons is :
A. Nucleus B. Atom C. Molecule D. Nucleon

102. How many elements are there in the third period of the modern periodic table?
A. 2 B. 18 C. 8 D. 32

103. Group VII Elements are called _____.
A. Halogens C. Alkali Metals
B. Chalcogens D. Alkaline earth metals

104. The energy released when an electron is added to a neutral atom is known as:
A. Ionization energy C. Electron affinity
B. Metallic character D. Electron negativity

105. An element with the electron configuration 2,8,2 belongs to
A. Group IIIA B. Period 2 C. Period 4 D. Group IIA

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106. Which of the following increases down a group in the periodic table

A. Electron affinity C. Metallic character

B. Electro negativity D. Ionization energy

107. Which one of the following is true about nuclear charge in the modern periodic table?

A. Decreases from left to right and increases from top to bottom

B. Increases from left to right and decreases from top to bottom

C. Decreases from left to right and from top to bottom

D. Increases from left to right and from top to bottom

108. Which one of the following elements is an alkaline earth metal?

A. Sr B. Sc C. Ga D. Cs

109. The position of the elements with atomic number 15 in the periodic table is:

A. Group IVA and period 3 C. Group VIA and period 3

B. Group III A and period 4 D. Group VA and period 3

110. Which of the following represents the electronic configuration of the elements in the same period of the periodic table?

A. 2,4 2,6 2,8 C. 2,1 2,8 2,8,1

B. 2,5 2,8,2 2,7 D. 2,7 2,8,1 2,5

111. A substance that can donate a proton to another substance is known as:

A. Acid B. Base C. Oxide D. Salt

112. Which of the following chemical formula represents an alkyne?

A. C_8H_{20} B. C_8H_{18} C. C_8H_{16} D. C_8H_{14}

113. The hydrocarbon used in the production of Oxyacetylene flame is:

A. Ethanoic acd B. Ethene C. Ethane D. Ethyne

114. What is the molecular mass of the alkenes with 7 carbon atoms? (at mass: C= 12,H =1)

A. 100 B. 99 C. 98 D. 96

115. What compound is represented 'Y' in the following chemical equation?

$Y + H_2O \longrightarrow H_2SO_3$

A. SO2 B. SO_3 C. S_2O_3 D. S_2O_5

116. Which of the following salts can be prepared by direct combination of elements?

A. Zn(NO3)2 B. ZnS C. CuSO4 D. Cu CO3

117. A certain oxide has reacted with water and phenolphthalein indicator was added to the product. The indicator changed its colour to red. The oxide can be:

A. CO_2 B. N_2O C. MgO D. NO

118. The first organic compound synthesized in the laboratory was:

A. Ethyne B. Aspirine C. Urea D. Ethane

119. The belief that "Only living things could produce organic compounds" was disproved by:

A. Amadeo Avogadro C. Antoine Laurent Lavoisier

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B. Friedrich Wohler D. Joseph Gay-Lussac

120. Which one of the following is inorganic compound?
A. Animal fat B. Sugar C. Water D. Vinegar

121. Which one of the following hydrocarbons has a carbon to carbon triple bond?
A. $C_3 H_6$ B. C_3H_4 C. C_7H_{16} D. $C_6 H_6$

122. A compound that is used as a jet fuel is:
A. Asphalt B. Diesel Oil C. Kerosene D. Petrol

123. Which one of the following metals reacts with oxygen to form an oxide?
A. Pt B. Pd C. Au D. Na

124. Which one of the following compound is acidic oxide?
A. NO B. Cro_3 C. CO D. H_2o

125. What is the gas produced when acids react with carbonates?
A. Water vapor B. H_2 C. CO_2 D. O_2

126. Bases which are soluble in water are called _____
A. Alkalis B. Alcohols C. Alkanals D. Weak bases

127. Which one of the following is NOT a neutralization reaction?
A. $HC1 + NaOH \longrightarrow NaC1 + H_2O$
B. $2KOH + H_2SO4 \longrightarrow K_2SO_4 + 2H_2O$
C. $2\ HC1 + MgC\ 1_2 \longrightarrow MgC1_2 + CO_2 + H_2O$
D. $Ca\ (OH)_2 + H_2\ SO_4 \longrightarrow C\ a\ SO_4 + 2H_2O$

128. One of the following is wrong while working with acids in the laboratory
A. If you drink acids, take a base such as $Mg\ (OH)_2$
B. Adding water to acids
C. If an acid enters your eye, wash it with water for a long time
D. If acid is spilled on your skin, wash the affected part with water and then wash it 10% $Na_2\ CO_3$ solution

129. The following are properties of metals EXCEPT
A. Sonorous B. Ductile B. Malleable D. Brittle

130. Alkali metals do not occur free in nature, why? Because they are
A. Metals B. Very soft C. Very reactive D. Very light

131. The following elements have similar chemical properties **except** one identify the exception
A. Beryllium B. Aluminum C. Magnesium D. Calcium

132. Which one of the following is the property of aluminum that makes it useful in its elemental state?
A. Its resistance to conduct heat
B. Its high density
C. Its ability to form protective oxide layer
D. Because it does not react with acids or alkalis

133. Which of the following statements is an ore of iron?
A. Hematite B. Calcite C. Bauxite D. Dolomite

134. Which of the following statements is NOT true about copper silver and gold?
A. They are most malleable and ductile metals

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B. They are not found free in nature
C. They are the best conductor of heat and electricity
D. They are dense metals

135. Which method of preventing iron from rust involves the formation of homogeneous mixture?
A. Alloying B. Galvanizing C. Electroplating D. All of the above

136. Which of the following is an alloy of copper and tin?
A. Brass B. Bronze C. Solder D. Steel

137. Which of the following is NOT a general property of metals?
A. High thermal conductivity
B. Low tensile strength
C. Ductility
D. Malleability

138. What is the chemical formula of borax?
A. Na_2CO_3 B. $Na\ NO_3$ C. NaCl D. $NO_2\ B_4O_7.\ 10\ H_2O$

139. Which of the following metals is used in flash bulbs?
A. Mg B. Na C. Ca D. Al

140. What property of aluminum makes it useful in making cooking utensils?
A. Low tensile strength
B. High electrical conductivity
C. High thermal conductivity
D. Low malleability

141. Which of the following alloys contains iron?
A. Steel B. Brass C. Bronze D. Electrum

142. A physical property of a metal by which sound is produced when a metal is struck is called _____
A. Sonorous B. Ductility C. Malleability D. Luster

143. Which one of the following compounds is used in the extraction of gold and silver?
A. KNO_3 B. Na_2CO_3 C. KO_2 D. Na CN

144. The principal ore used for the extraction of aluminum is:
A. Bauxite B. Cryolite C. Mica D. Kaolin

145. The common element present in both Brass and Bronze is:
A. Mg B. SN C. Zn D. Cu

146. Which of the following is expected to have the highest atomic radius?
A. Be (Z =4) B. B (Z = 5) C. Li (Z=3) D. N (Z=7)

147. Which of the following compounds of sodium is used in the manufacture of soap and detergents?
A. $Na_2\ Co_3$ B. NaCl C. $NaNo_3$ D. NaOH

148. The metal used as deoxidizer in metallurgy is :
A. Mg B. Ca C. Al D. Na

149. An alloy of lead and tin is known as
A. Solder B. Bronze C. Duralumin D. Monel metal

150. Most cooking utensils are made up of aluminum. What is the reason? Aluminum is
A. a good conductor of electricity B. a light metal

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C. a good conductor of heat D. a good oxidizing agent

151. Conversion of cast iron to steel needs:

A. lowering of carbon content B. lowering content of iron

C. increasing content of oxygen D. increasing content of sulfur

152. Rusting of iron can be prevented by:

A. reduction B. electroplating C. oxidation D. froth floatation

153. Which of the following is the correct sequence of steps in the production of copper?

A. Refining → Reduction → Roasting → Ore concentration

B. Roasting → Ore concentration → Reduction → Refining

C. Ore concentration → Roasting → Reduction → Refining

D. Reduction → Retining → Roasting → Ore concentration

154. Which negative ion is used to recover gold from its ore?

A. Cl^- B. NO^-_3 C. CO^{-2}_3 D. CN^-

155. Which of the following is mineral containing calcium?

A. Limoite Haematite C. Rock phosphate E. Chalcocite

156. Which of the following compounds is used to make Lithopone?

A. $BASO_4$ B. $Mg\ SO_4\ 7H_2O$ C. MgO D. $CaCl_2$

157. The conversion of cast iron in to steel involves:

A. adding limestone C. reducing the iron ore

B. introducing more silicon D. lowering carbon content

158. Which of the following blast furnace reactions is used to make a slag?

A. CO2 + C → 2CO C. Fe3O4 + CO → FeO + CO2

B. CaO +SiO2 → CaSiO3 D. FeO + CO → Fe + CO2

159. Which of the following metals can be found free in nature?

A. Cu B. Fe C .Ap D. Mg

160. Which of the following stages in the production of copper is the last one?

A. Roasting B. Ore concentration C. Reduction D. Electrolytic refining

161. What property of aluminum makes it useful in making air plane wings? Aluminum:

A. Corrodes easily B. is a light metal C. conducts heat D. conducts electricity

162. The non – metal used in vulcanization of natural rubber is: A. Rhombic – phosphorous

A. Rhombic – Phosphorous C. Red – Sulfur

B. Monoclinic – Carbon D. Fullerenes – Carbon

163. The non – metal used in vulcanization of natural rubber is :

A. Nitrogen B. Phosphorous C. Sulfur D. Oxygen

164. Which of the following is true about nitrogen? Nitrogen is:

A. the most abundant element in the earth's crust C. a micronutrient of plants

B. a highly reactive non metal D. fixed by living organisms such as bacteria

165. Which substance absorbs dangerous UV rays and acts as protecting blanket?

A. O_2 B. O_3 C. NO_2

166. The property of elements to exist in two or more different forms under the same physical state is known as:

A. Isomer B. Polymer C. Allotropy D. Condensation

167. An element used in the vulcanization of rubber is:

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A. Sulphur B. Phosphorous C. Sodium D. Barium

168. Which one of the following elements is stored under water to prevent it from reacting with oxygen?
A. Silicon B. White phosphorus. C. Red phosphorus D. Rhombic sulphur

169. Which of the following non- metals is liquid at room temperature?
A. Bromine B. Sulfur C. Phosphorus D. Iodine

170. Graphite is good conductor of electricity. This is because
A. is metal B. has crystalline structure
C. is non metal D. contains mobile electrons

171. A solid sample of an element is poor conductor of electricity glows (give light) in darkness. This element is:
A. Sulfur B. phosphorus C. Potassium D. Calcium

172. Rhombic and monoclinic are the crystalline allotropes of
A. Carbon B. sulfur C. Phosphorus D. Bromine

173. Contact process is the industrial production of
A. Sulfuric acid B. Sulfur C. Nitric acid D. Ammonia

174. Which of the following chemical equations represent reaction of calcium carbonate ($CaCO_3$) on heating?
A. $CaC\,O_3 \xrightarrow{heat} CaO + CO_2$
B. $CaC\,O_3 \overset{heat}{} Ca + C + O_2$
C. $CaCO_3 \xrightarrow{heat} CaO + CO$
D. $CaC\,O_3 \overset{heat}{} CaO + C + O_2$

175. Seventy eight percent (78%) of air by volume is
A. Oxygen B. Carbon dioxide C. Noble gases D. Nitrogen

176. Which of the following acids is used in softening of water?
A. Nitric acid B. Sulfuric acid
C. Phosphoric acid D. Hydrochloric acid

177. Which of the following is true about the composition of air?
A. The composition of air is constant whenever we go
B. The amount of water vapor in air of the equatorial rain forest is higher than the tropical desert
C. The amount of carbon dioxide is more in rural area compared to industrial cities
D. Helium is the most abundant inert gas in air

178. Which of the following parts of gases is responsible for warning of the earth?
A. Chlorofluorocarbon and sulfur dioxide
B. Methane and nitrogen oxide
C. Nitrogen oxide and sulfur dioxide
D. Methane and carbon dioxide

179. Which of the following gases could cause a glowing splint to burst in to flame?
A. Oxygen B. Nitrogen C. Hydrogen D. Chlorine

180. Oxygen can be prepared by the following methods in the laboratory EXCEPT
A. Decomposition of hydrogen peroxide in presence of a catalyst
B. Reaction of active metals and water
C. Heating of nitrates

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D. Thermal decomposition of potassium chlorate in presence of a catalyst

181. Which of the following is correct regarding the uses of hydrogen?

A. Hydrogen can support burning but it does not burn
B. Because hydrogen is non flammable meteorologists prefer it than helium
C. Hydrogen can be used to make margarine
D. Hydrogen is denser than air

182. In the water treatment plant brown colour due to organic molecules that gives bad smell and taste can be removed by

A. Aluminiumsulphate B. Chlorine
C. Calcium hydroxide D. Activated carbon

183. Which of the following paramenters for drinking water should be at zero level for 100ML or 1L treated water?

A. Micro biological B. Physico chemical
C. Toxic undesirable substance D. All of the above

184. Which of the following is true about the given oxides?

A. Na_2O and Pb O_2 are neutral oxides C. N_2O and SO_2 are basic oxides
B. Zn O and PbO_2 are amphoteric oxides D. CO and NO are peroxides

185. From the following oxides identify the one that is amphoteric

A. K_2O B. CO_2 C. Al_2O_3 D. Na_2O_2

186. What would be the product when an acid reacts with carbonates?

A. Salt B. Water C. carbon dioxide D. Hydrogen

187. Which of the following is true regarding weak, strong, concentrated and dilute acids?>

A. The term strong acid is the same as concentrated acid
B. A weak acid can have a concentrate or dilute solutions
C. The term strong acid indicates a large amount of dissolved material in a given volume of solution
D. Concentrated refers to the extent of ionization or dissociation

188. If the PH of a solution is less than seven, the solution is said to be

A. Basic B. Neutral C. Acidic D. Amphoteric

189A salt formed by the following reaction is _____

A. $H_2SO_4 + NaOH \longrightarrow H_2SO_4 + H_2O$

A. Acidic salt B. Basic salt C. Neutral salt D. Amphoteric

190. What does 'x represent in the following series of reactions?

Ca O + 3C$\longrightarrow$ X + CO

X+ $2H_2O \longrightarrow$ Ca $(OH)_2$+ C_2H_2

A. Ca Cl_2 B. CaC_2 C. CaO_2 D. CaH_2

191. The gas used in the production of soft drinks is:

A. N_2O B. CO C. CO_2 D. N_2O_5

192. An oxide of nitrogen which is commonly known as laughing gas is

A. N_2O B. NO C. N_2O_3 D. N_2O_5

193. Which of the following sulfate is used in treatment of skin diseases?

A. Ba SO_4 B. Mg SO_4 $7H_2O$ C. Zn SO_4 $7H_2O$ D. CU SO_4 $5H_2O$

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194. When drops of dilute HCL are added to a certain solution, a gas that changes lime water to milky suspension was produced. This indicates the presence of
A. Sulfates B. Nitrates C. Chlorides D. Carbonates

195. Which of the following is the first stage in the solvay process?
A. $NH3 + H2O + CO2 \longrightarrow NH4HCO3$
B. $CaCO3 \xrightarrow{heat} CaO + CO2$
C. $NH4HCO_3 + NaCl \quad NaHCO3 + NH4Cl$
D. $NaHCO_3 \xrightarrow{heat} Na_2CO_3 + H_2O + CO_2$

196. Which of the following is the use of ammonia?
A. Manufacture of nitric acid B. Making lead storage battery
C. Making sop and detergents D. Making TNT

197. The last stage in the contact process is:
A. $S + O_2 \longrightarrow SO_2$ B. $SO_3 + H_2O \longrightarrow H_2SO_4$
C. $2SO_2 + O_2 \; V_2O_5 \longrightarrow 2SO_3$ D. $H_2S_2O_7 + H_2O \longrightarrow 2H_2SO_4$

198. Which substance is used in sterilization of water?
A. Cl_2 B. SO_2 C. N_2O D. CO_2

199. Which of the following nutrients is required by plants in small amount?
A. Nitrogen B. Potassium C. Copper D. Phosphorous

200. The most abundant component of air is
A. Oxygen B. Nitrogen C. Carbon dioxide D. Noble gases

201. The commercial preparation of oxygen involves
A. Heating mercury (II) oxide C. Heating nitrates
B. Thermal decomposition of $KClO_3$ D. Fractional distillation of liquid air

202. Hydrogen is used in
A. Making margarine B. The welding process
C. steel industries D. treatment of sewage

203. Which of the following toxic substances has the least recommended concentration in water?
A. Lead B. Mercury C. Cadmium D. Fluorine

204. The type of coal that gives the least amount of energy is
A. Peat B. lignite C. bituminous D. anthracite

205. Which substance causes depletion of the ozone layer?
A. CO_2 B. SO_2 C. CFC's D. NO_2

206. Which of the following oxides is used to treat acidic soil?
A. MgO B. CaO C. SO_2 D. P_2O_5

207. Which of the following is an agent in mechanical weathering of soil?
A. Chemical reactions C. Action of man, plant and animals
B. Expansion and colling due to heat D. Evaporation of moisture

208. Which of the following is an equation for the Laboratory preparation of Nitrogen?
A. $NH_4NO_2 \longrightarrow N_2 + 2H_2O$ C. $N_2(g) \longrightarrow N_2(\ell)$
B. $2NO \longrightarrow N_2 + O_2$ D. $2NH_3(g) \longrightarrow N_2 + 3H_2$

209. The acids used in making 'Agua regia' are:

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A. H_2SO_4 and HNO_3 B. HCl and HNO_3 C. HCl and HNO_3 D. HNO_2 and HCl

210. Which of the following oxides is used as a fumigant?
A. NO B. NO_2 C. SO_3 D. SO_2

211. Which of the following is true about the CO_2 cycle?
A. CO_2 is added to the atmosphere by photosynthesis
B. Respiration removes CO_2 from the air
C. Combustion of fossil adds CO_2 to the atmosphere
D. Photosynthesis decreases the amount of oxygen in the air

212. White phosphorous is stored in water because it:
A. is extremely poisonous C. melts when exposed to air
B. Vaporizes at room temperature D. burns in air

213. What type of conditions of pressure and temperature are required in the Haber process of production of NH_3
A. High pressure and moderate temperature
B. High pressure and high temperature
C. Low pressure and low temperature
D. Low pressure and high temperature

214. Which of the following is true about allotropes of carbn?
A. Graphite is non – conductor
B. Diamond is harde than graphite
C. Graphite has greater density
D. Diamond is opaque

215. Which of the following is used in the process of vulcanization of rubber?
A. Sulfur B. Chlorine C. Phosphorous D. Nitrogen

216. An acid rain is caused by
A. SO2 B. Ozone C. Chlorofluoro carbons D. Phosphates

217.What does 'Y' represent in the following equation?
$2H_2O_2$ Mi O_2 Y + $2H_2O$
A. H_2 B. O2 C. OH^- D. H_3O^+

218. Which of the following can be used to extinguish fire caused by burning of flammable substances such as petrol?
A. Water extinguisher C. Oxygen
B. Dry chemicals D. foam extinguisher

219. Which of the following is physic- chemical parameter of water purity?
A. Amount of fecal califorms C. Turbidity of water
B. Amount of caliform organism D. Amount of toxic substance

220. Which of the following is a liquid fuel?
A. Charcoal B. Kerosene C. Producer gas D. Wood

221. The substance used to convert vegetable oil to margarine is
A. H_2 B. O_2 C. N_2 D. Cl_2

222. The allotropes of phosphorous are:
A. Rhombic and Monoclinic B. Diamond and graphite
C. Ozone and oxygen D. Red and white

223. Permanent hardness of water is removed by:

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A. treating with Na_2CO_3 C. treating with NaOH

B. boiling the water D. cooling the water

224. The compound used to remove harmful substances from water by forming insoluble solids is:

A. Cl_2 B. O_2 C. $Al_2 (SO_4)_3$ D. $Na_2 CO_3$

225. The soil in a certain region is acidic, and it is NOT suitable to grow certain crops.Which compound can be used to remove the acidity of the soil?

A. Na OH B. Ca $(OH)_2$ C. Fe $(OH)_3$ D. Al$(OH)_3$

226. Which of the following is required by plants in large amounts?

A. B B. Mo C. S D. Fe

227. Farmers in Ethiopia usually use DAP to improve soil fertility. What is the chemical formula of DAP?

A. $(NH_4)_2 HPO_4$ B. $(NH_2)_2CO$ C. NH_4NO_3 D. K_2SO_4

228. Which of the following is true about natural gas? Natural gas is:

A. transported by land B. not found in Ethiopia

C. mainly made up of ethane D. a mixture of hydrocarbons

229. The physical process used in refining petroleum is :

A. Distillation B. Decantation C. Filtration D. Sublimation

230. The air pollutant that leads to asphyxiation when absorbed in to blood is:

A. SO_2 B. CO C. CO_2 D. N_2

231. One of the following is a chemical method of treatment of water. Which one is it?

A. Screening B. Filtration C. Bacterial decomposition D. Chlorination

232. The major elements (macronutrients) that plants should get through fertilizers are:

A. N_2,pb, K B. N_2, P, K C. O_2,P, K D. H_2, P, Ca

233. Air pollutants that may escape to the air during road construction and other human activities are called_____

A. Oxides of nitrogen B. Oxides of carbon C. Particulates D. Oxides of Sulphur

234. One of the following natural processes doesn't increase the concentration of carbon dioxide dioxide in the atmospheric air.

A. Combustion of mineral coal C. Photosynthesis

B. Decomposition of organic matter D. Respiration

235. One of the following compounds is used for water purification:

A. A1 $(NO_3)_3$ B. A1 $(OH)_3$ C. $A1_2 (CO_3)_3$ D. $A1_2(SO_4)_3$

236. Hardness of water is caused by the presence of:

A. Na^+ and K^+ ions C. Ca^{2+} and Mg ions

B. Mg^{2+} and Na^+ ions D. Ca^{2+} and K^+ ions

237. Which one of the following compounds reduces the acidity of the soil?

A. $HCIPO_4$ B. $CaCO_3$ C. NaC1 D. NH_3

238. Which one of the following is wrong about soils of different regions?

A.Soils of areid regions are acidic C. Soils of arid regions are alkaline

B. Soils of humid regions are acidic D. Soils of desert regions are mostly neural

239. One mole of any pure substance:

A. Occupies the same volume at the same condition C. Has equal mass

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B. Has the same density D. Contains equal number of particles

239. What is the molecular mass of sodium carbonate Na_2Co_3?

A. 51 B. 106 C. 120 D. 240

240. Calculate the percentage of carbon in Co_2

A. 27.3% B. 33.3% C. 36% D. 50%

241. Which of the following is true about one mole of ammonia, NH_3? It

A. Represents one molecule of ammonia

B. Contains 6.02×10^{23} atoms of nitrogen & hydrogen

C. Represents an Avogardro number of ammonia molecules

D. Has a mass of 44 grams

242. What is the percentage composition of carbon in CO? (Atomic Mass C = 12, O=16)

A. 57.1% B. 42.9% C. 36.4% D. 28.7%

243. The empirical formula of hydrocarbon is CH and its molecular mass is 78g/mol. What is the molecular formula?

A. C_2H_2 B. C_2H_4 C. C_6H_6 D. C_6H_8

244. Which of the following is true about one mole of ammonia, NH_3? It

A. Represents one molecule of ammonia
B. Contains 6.02×10^{23} atoms of nitrogen & hydrogen
C. Represents an Avogardro number of ammonia molecules
D. Has a mass of 44 grams

245. What is the mass of moles of H_2SO_4? (Atomic mass H= 1, S = 32, O=16)

A. 196 grams B. 98 grams C. 49 grams D. 24.5 grams

246. How many atoms of magnesium are found in 0.5 mole of magnesium?

A. 3.01×10^{23} atoms C. 0.5 atoms
B. 6.02×10^{23} atoms D. 1.0 atom

247. What is the molar mass of sucrose ($C_{12}H_{22}O_{11}$)? (Atomic mass C = 12, H = 1,O=16)

A. 180 B. 342 C. 171 D. 360

248. What is the percentage composition of sulfur is SO2? (Atomic mass: S= 32,O=16)

A. 12.5% B. 25% C. 50% D. 75%

249. A compound with the simplest formula C2H5O has a molecular mass of 90. The molecular formula of the compound is (at mass: C = 12, H = 1, O = 16)

A. $C_5H_{14}O_4$ B $C_2H_{10}O_2$ C. $C_6H_{12}O_4$ D. $C_4H_{10}O_2$

250. Boron has two naturally occurring isotopes. These are 10B (20%) and 11B (80%) what is the average atomic mass of born?

A. 10.2amu B. 10.4amu C. 10.6amu D. 10.8amu

251. What is the formula mass of CuSO4. 5H2O? (Cu = 64,S = 32 O=16,H=1)

A. 160amu B. 250amu C. 280amu D. 320amu

252. What is the mass of 2.5 moles of magnesium atom? (Atomic mass Mg = 24)

A. 60g B. 50g C. 40g D. 30g

253. Which of the following contains the highest percentage composition by mass of nitrogen? (N = 14 , O = 16)

A. NO_2 B. N_2O_3 C. NO D. N_2O_5

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254. The empirical formula of a hydrocarbon is CH2. What is the molecular formula if the molar mass is 42?

A. C_6H_{12} B. C_5H_{10} C. C_4H_8 D. C_3H_6

255. The isotopic masses of an element is 20 and 22 with relative abundance of 90% and 10% respectively what is the average atomic mass of the element?

A.42.20 B. 22.82 C. 22.20 D. 21.20

256. What is the mass of 3.01×10^{23} molecules of CO_2?

(Atomic mass ⟶ C= 12,O = 16)

A.11g B. 22g C. 33g D. 44g

257. Calculate the formula mass of $(NH_4)_2\ CO_3$:

(Atomic mass ⟶ N= 14, H = 1, C = 12, O = 16)

A. 104 amu B. 116 amu C. 94 amu D. 96 amu

258. What is the mass of 0.5 mole of hydrogen atom?

A. 0.5 g B. 1g C. 1.50g D. 2g

259. Find the percentage composition of H_2O in crystallized (hydrated) Copper sulphate, cuSO4. (Atomic Mass ⟶ Cu= 64, S= 32,

A.38.0% B. 12.8% C. 25.6% D. 36.0%

260. A compound is found to contain 40% C, 6.67% H, and 53 .33% O. The molecular mass is found to be 60 . Calculate the molecular formula of this compound:

(Atomic mass ⟶ C=12, H = 1, O = 16)

A. $C_2\ H_4\ O_2$ B. $C_4\ H_2O_2$ C. $C_4\ H_6\ O_2$ D. $C_2\ H_{\ 6}\ O_2$

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