2 ADDIS ABABA CITY ADMINISTRATI EDUCATION BUREAU 2

GRADE EIGHT MODEL EXAM
CHEMISTRY EXAMINATION
2012/2020

Number of Items: 60 **Time Allowed: 1 Hour**

1. Which of the following chemical product is produced at Zeway in Ethiopia?
   A. Caustic soda
   B. Paper
   C. Pharmaceuticals
   D. Soda ash

2. A pure substance that **CANNOT** be broken down into simpler substance by an ordinary chemical reaction is called
   A. a compound.
   B. an element.
   C. an isotope.
   D. a mixture.

3. A change that results in the formation of new substance with its own property is known as
   A. chemical change.
   B. change of state.
   C. mechanical change.
   D. physical change.

4. Which of the following apparatus is used for the separation of salt from salt solution?
   A. Condenser
   B. Evaporating dish
   C. Filter paper
   D. Thermometer

5. What is the name of an element having the chemical symbol “Ag”?
   A. Gold
   B. Lead
   C. Mercury
   D. Silver

6. The combining power of an element is called
   A. coefficient.
   B. subscript.
   C. periodicity.
   D. valence number.

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7. What is the formula name of CuO?
   A. Copper peroxide
   B. Copper (III) oxide
   C. Copper (II) oxide
   D. Copper (I) oxide

8. The statement "*In a chemical reaction the total mass of the reactants is equal to that of the products*" is the law of
   A. mass action.
   B. conservation of mass.
   C. definite proportion.
   D. multiple proportion.

9. Which of the following statement is true about Dalton's atomic theory?
   A. All atoms of a given element are not identical in mass and properties.
   B. Atoms combine in a fixed small whole number ratio to form compounds.
   C. Atoms of one element are the same to other elements in mass and other properties.
   D. Atoms are divisible.

10. What is an energy level (atomic shells)? It is the
   A. arrangement of electrons in an atom.
   B. path that an electron takes around the nucleus of an atom.
   C. lowest energy arrangement of electrons in an atom.
   D. highest energy arrangement of electrons in an atom.

11. The third atomic shell can be designated by the letter
   A. K.
   B. L.
   C. M.
   D. N.

12. The electrons that belong to the outer most shell are called
   A. inner electrons.
   B. shielding electrons.
   C. valence electrons.
   D. valence shells.

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13. The vertical column of the elements in the periodic table is known as
    A. row.
    B. group.
    C. period.
    D. period number.

14. What is the name of an alkene that contains five carbon atoms?
    A. Heptene
    B. Nonene
    C. Octene
    D. Pentene

15. The name of the group of salts that are derived from carbonic acid is known as
    A. carbonates.
    B. carbides.
    C. carbonic.
    D. carbines.

16. Which of the following is true about the uses of sodium? It is used in
    A. flares and fireworks.
    B. food preservation.
    C. street lights.
    D. the extraction of chromium.

17. The primary use of tantalum metal is
    A. as a monetary reserve for individuals.
    B. in making capacitors.
    C. in the preparation of gasoline.
    D. the purification of gases.

18. Which one of the following is the general property of non-metals?
    A. High densities
    B. High melting points
    C. Malleability
    D. Britility

19. The general increase in the earth's average temperature is known as
    A. air pollution.
    B. global warming.
    C. green-house effect.
    D. radiation.

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20. Which one of the following is the effect of global warming? It
    A. causes irritation to the lungs.
    B. brings about ozone depletion.
    C. affects breathing.
    D. rises the sea levels.

21. Which one of the following is the application of chemistry in agriculture?
    A. The production of medicines and drugs
    B. The production of cement, limestone, glass and paints
    C. Manufacturing of cosmetics, textiles, dyes, soaps and detergents
    D. Production of fertilizers, pesticides and herbicides

22. Which of the following statement is true about the difference between elements and compounds?
    A. Elements have properties differ from those of their constituents while compound are simplest type of matter that retains characteristic properties.
    B. Elements can be broken down in to simpler substances while compounds cannot be broken down into simpler substances under normal condition.
    C. Elements are composed of one type of atom while compounds are composed of two or more elements chemically combined in a fixed ratio.
    D. Elements can be classified into inorganic and organic while compounds into metal, non-metals and metalloids.

23. Which of the following methods of separation is used to separate a mixture of salt and water?
    A. Decantation
    B. Evaporation
    C. Filtration
    D. Simple distillation

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24. The coefficient 3 in the formula $3Cl_2$ represents
    A. 3 atoms of chlorine.
    B. 2 molecules of chlorine.
    C. 3 molecules of chlorine.
    D. 6 molecules of chlorine.

25. In balancing a chemical equation using the least common multiple (LCM) method the following steps are followed.
    I. Changing the word equation to formula equation
    II. Finding the LCM of the total valence number of each element
    III. Writing the total valence number of each of the elements above their symbols
    IV. Dividing the LCM by each total valence number and using the dividend as the coefficient for each species in the equation

    Which of the following is the correct step for balancing a chemical equation using the LCM method?
    A. I, II, III and IV
    B. I, III, II and IV
    C. II, I, III and IV
    D. III, II, IV and I

26. Which of the following statements describes the short comings of Dalton's atomic theory?
    A. Atoms combine in a fixed small whole number ratio to form compounds.
    B. Atoms of different elements are different.
    C. Atoms of the same element have the same mass.
    D. Matter consists of very small particles called atoms.

27. What is the maximum number of electrons that the L-shell can accommodate?
    A. 2
    B. 8
    C. 18
    D. 32

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28. If an element has an electronic configuration of 2,8,1, to which group does it belongs in the periodic table?
    A. I
    B. II
    C. III
    D. IV

29. Given the following chart that shows portion of the periodic table.

	Be		B	C		O		
Na	Mg			Si			Cl	

    Which of the following statement is true about the trends in properties of the elements in the chart?
    A. Cl is more metallic than Si
    B. O has smaller nuclear charge than B
    C. Na is less electronegative than Mg
    D. Be is larger than C

30. One of the following is a property of acids. Which one is it?
    A. Acids change red litmus paper to blue.
    B. Acids have a P^H value above 7.
    C. Acids react with bases to form a salt and hydrogen .
    D. Acids react with nitrates to form a salt, water and carbon dioxide.

31. Which of the following element is found in free elemental form in nature?
    A. Sodium
    B. Calcium
    C. Gold
    D. Potassium

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32. Which one of the following elements **CANNOT** be found free in nature?
    A. Aluminum
    B. Copper
    C. Iron
    D. Tantalum

33. Oxygen mainly occurs in the form of
    A. silicates.
    B. sulphates.
    C. nitrates.
    D. phosphates.

34. Which of the following is **NOT** true about the occurrence of sulphur?
    A. Combined sulphur occurs in many minerals and ores.
    B. Sulphur is found uncombined in some volcanic regions.
    C. Elemental sulphur exists in molecular form as S_4
    D. Sulphides and sulphates are the main compounds of sulphur.

35. Which water treatment method uses micro-organisms in water purification?
    A. Biological
    B. Chemical
    C. Chlorination
    D. Physical

36. Which one of the following natural fertilizer is used to improve soil fertility?
    A. Ammonium nitrate
    B. Animal dung
    C. Diammonium phosphate
    D. Potassium sulphate

37. Which of the following is the use of coal? It is used
    A. as a solid fuel.
    B. in production of fertilizers.
    C. in manufacture of iron.
    D. as gases fuel.

38. The first step in determining molecular mass of a substance is
    A. getting the total mass of each element in the molecule.
    B. deciding the number of each kind of atom per formula.
    C. identifying each kind of atom present in the formula of the compound.
    D. multiplying the number of atoms with their respective atomic masses.

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39. In the table below the physical properties of certain elements are given.

Elements	Melting point/^{o}c	Boiling point/ ^{o}c	Density(g/cm^{3})
I	660	2467	2.7
II	1085	2570	9.0
III	1530	2861	7.9
IV	-39	357	13.5

Which of the following is true about the elements? Element

A. I is Iron.
B. IV is Mercury.
C. III is Copper.
D. II is Aluminum.

40. A student mixed 10g of iron filings with 6g of powdered sulphur. She/ he placed half of this mixture on a sheet of paper and kept another half of the mixture for the second experiment.

Experiment 1: The student brought one end of a magnet close to the first half of the mixture and observed one what has happened.

Experiment 2: The student placed the remaining half of the mixture in a test tube and heated for few minutes. When cooled he took the product formed and powdered it. She/he moved a magnet over the powdered product and observed what has happened.

Which of the following statements is true about the two experiments?

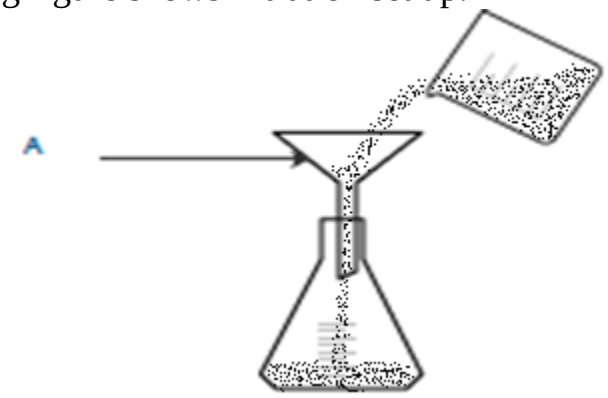
A. Experiment 1describes the formation of a compound.
B. Experiment 2 describes the formation of a mixture.
C. Experiment 1describes the formation of a mixture.
D. No new substance is formed in experiment 1.

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41. Which of the following is an example of a chemical change?
    A. Burning of paper
    B. Boiling of water
    C. Heating of magnesium ribbon
    D. Melting of an ice

42. If the following figure shows filtration set up.



What is the apparatus represented by letter "A"?
    A. Beaker
    B. Filter paper
    C. Flask
    D. Funnel

43. Which of the following is the chemical formula of ammonium sulphate?
    A. $(NH_4)_2SO_4$
    B. NH_4SO_4
    C. $NH_4(SO_4)_2$
    D. $(NH_4)_2(SO4)_2$

44. When the following equation is correctly balanced, what are the balancing coefficients respectively?

$$C + O_2 \rightarrow CO$$

    A. 1, 1and 1
    B. 1, 1 and 2
    C. 1, 2 and 4
    D. 2, 1and 2

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45. Which of the following is the electronic configuration of phosphorus? ***(Atomic number: P = 15)***
A. 2,5,8
B. 2,7,6
C. 2,6,7
D. 2,8,5

46. Which of the following is a molecule of an element?
A. CCl_4
B. CO_2
C. H_2
D. H_2O

47. To which group and period of the periodic table does an element with atomic number 11 belong respectively?
A. IA, 3
B. IIA, 1
C. IIA, 3
D. IIIA, 1

48. Which one of the following oxides is acidic?
A. CaO
B. CO
C. NO
D. SO_2

49. Given the following incomplete chemical equation.
$Na(s) + H_2O(l) \rightarrow ?$
What are the products of this reaction?
A. NaO(s) and $H_2(g)$
B. NaOH(aq) and $H_2O(l)$
C. NaOH(aq) and $H_2(g)$
D. NaO(s) and $H_2O(l)$

50. Among the following, which one is a binary salt?
A. $CaCl_2$
B. $KClO_3$
C. $MgCO_3$
D. Na_2SO_4

51. Which one is an alloy that made up of copper and zinc?
A. Brass
B. Bronze
C. Cupronickel
D. Electrum

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52. To investigate the nitrogen content of air. A group of grade eight students poured water into a large glass trough. They floated a crucible in the water in the trough and into the crucible they put dry phosphorus. They placed a bell jar over the top of the trough and inserted a heated glass rod through the hole of a glass stopper to ignite the phosphorus. The phosphorus burnt and quickly filled the jar with white fumes which were prevented from escaping by the rubber stopper. When no more changes were observed in the reaction they found that the level of water had risen up inside the bell jar. When they removed the stopper the water level returned to its original level. If the volume of water before the experiment was 75 cm^3 and the volume after the phosphorus completely reacted was 60 cm^3, what was the estimated fractional part of nitrogen?

A. 0.80
B. 0.60
C. 0.75
D. 0.20

53. In the school laboratory you want to purify dirty water. If you take one cup of dirty water and continue your purification process, what is the physical treatment you will do in the purification process?

A. Biological treatment
B. Filtration and chlorination
C. Screening and chlorination
D. Screening and filtration

54. If in a certain laboratory dilute nitric acid is added in to a beaker containing ammonium hydroxide, what would be the product?

A. Ammonia
B. Ammonium nitrate
C. Concentrated nitric acid
D. Sodium hydroxide

55. What is the molecular mass of white phosphorus, P_4?
(Atomic mass: P = 31)

A. 4
B. 31
C. 62
D. 124

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56. How many atoms are there in 1.5 moles of carbon?
(Avogadro's number = 6.022 x 10^{23})
A. 6.022×10^{23} C. 36.132×10^{23}
B. 9.033×10^{23} D. 84.308×10^{23}

57. If the empirical formula of a compound is CH and its molecular formula mass is 78, what would be the molecular formula of the compound?
(Atomic masses: H = 1, C = 12)
A. C_6H_{12} C. C_5H_{10}
B. C_2H_4 D. C_6H_6

58. Which of the following is true about the continuity and discreteness theory of matter? According to
A. Democritus there is a limit to which matter is broken while Aristotle says it is infinitely divisible.
B. Democritus matter is continuous while Aristotle says it is discrete.
C. Democritus rejects the existence of atoms while Aristotle believed the idea of atoms.
D. Democritus there is a limit to which matter is broken while Aristotle says it is finitely divisible.

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59. To three test tubes labeled I, II, and III containing NaOH solution, the following indicators test were performed as shown in the table below.

Test tubes	Solution	Indicator
I	NaOH(aq)	Red litmus paper
II	NaOH(aq)	Blue litmus paper
III	NaOH(aq)	Phenolphthalein solution

Which of the following is true about the color change in the test tubes? In test tube

A. I red litmus paper changes to blue.
B. II blue litmus paper changes to red.
C. III phenolphthalein solution changes to blue.
D. III phenolphthalein solution remains colorless.

60. A group of grade 8 students went to visit the nearby river to investigate the causes of water pollution. They listed the major causes of water pollution in their report after their visit.
Which one of the following should **NOT** be included in their report as a cause of water pollution?

A. Domestic wastes
B. Agricultural chemicals
C. Heavy rain fall
D. Industrial wastes

THE END