

Paper 2:

True/False

Indicate whether the statement is true or false.

1. Carbon dioxide is an ionic compound.
2. Carbon dioxide is present at a higher concentration in air that is exhaled than in air that is inhaled.
3. The most abundant element in the universe is oxygen.
4. All of the noble gas elements except neon have eight electrons in their outermost energy level.
5. In covalent bonding, atoms can achieve a full octet of electrons by sharing electrons.
6. A typical potassium ion has a positive charge because it has lost an electron.
7. A crystal of the compound potassium fluoride consists of potassium and fluoride molecules.
8. 52. The formula for methane, CH_4 , indicates that each methane molecule contains one carbon atom and four hydrogen atoms.

Multiple Choice

Identify the choice that best completes the statement or answers the question.

9. What type of reaction takes place when fluorine reacts with sodium bromide?
 - a. Single-displacement
 - b. Combination
 - c. Decomposition
 - d. Double-displacement
10. What is the probable product of a double-displacement reaction?
 - a. A new compound and the replaced nonmetal
 - b. A single compound
 - c. A new compound and the replaced metal
 - d. Two different compounds
11. Which of the following factors does not affect the rate of reaction?
 - a. The temperature at which the reaction is carried out.
 - b. The size of the container used.
 - c. The physical state of the reactants.
 - d. The amount of the reactants.
12. A formula unit of calcium bromide has two bromide ions corresponding to each calcium ion in the compound. What is the formula of calcium bromide?
 - a. CaBr
 - b. CaBr_2
 - c. Ca_2Br
 - d. Ca_2Br_2
13. Which allotrope of carbon has a three-dimensional solid structure?
 - a. Coal
 - b. Diamond
 - c. Graphite
 - d. Granite



14. A formula unit of magnesium chloride has two chloride ions corresponding to each magnesium ion in the compound. What is the formula of magnesium chloride?
- MgCl
 - MgCl_2
 - Mg_2Cl
 - Mg_2Cl_2
15. A substance will conduct an electric current if it _____.
- is wet
 - forms ions in solution
 - is covalent
 - consists of ions in the dry state
16. Based on its position in the periodic table, the most likely charge of an iodide ion is _____.
- 1+
 - 1-
 - 2+
 - 7-
17. Which of the following formulas is incorrect?
- $\text{Al}_2(\text{SO}_4)_3$
 - AlOH_3
 - $\text{Ca}(\text{OH})_2$
 - $(\text{NH}_4)_2\text{S}$
18. Which of the following compounds can be used as a drying agent?
- $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
 - hygroscopic alum
 - calcium chloride dihydrate
 - the dihydrate of calcium sulfate
19. In order to separate two liquids from each other by distillation, they must _____.
- evaporate at the same temperature
 - evaporate at different temperatures
 - both be molecular substances
 - both be inorganic compounds
20. Which of the following pairs of compounds are allotropes?
- sulfuric acid and nitric acid
 - ozone and O_3
 - Cl_2 and Cl
 - O_2 and O_3
21. _____ is an allotrope of carbon.
- Diamond
 - Carbon monoxide
 - Ozone
 - Black phosphorus
22. Nitrogen atoms each have five valence electrons. How many pairs of electrons must be shared in a molecule of N_2 ?
- 1
 - 3
 - 4
 - 6
23. When an atom loses an electron, it becomes a _____ ion.
- negative
 - positive
 - neutral
 - polyatomic



24. Noble gases are sometimes used to protect valuable documents because they are _____.
a. molecular
b. totally inert
c. unreactive
d. unstable
25. The properties of a compound are _____ the properties of the elements that form it.
a. similar to
b. different from
c. identical to
d. derived from
26. Think of the terms *octet*, *octopus*, and *octagon*. Infer the meaning of the prefix *oct-*.
a. shape
b. eight
c. stable
d. multi-
27. A regular, repeating arrangement of atoms, ions, or molecules is _____.
a. amorphous
b. a crystal
c. a compound
d. impossible to break down
28. The formula for iron(III) oxide, Fe_2Cl_3 , shows that one unit of the compound contains _____ iron atoms.
a. 2
b. 3
c. 5
d. 6
29. The electron configuration of Na is $[\text{Ne}]3s^1$ and that of Cl is $[\text{Ne}]3s^23p^5$. What is the formula of the compound when these elements react?
a. Na_2Cl
b. NaCl_2
c. NaCl
d. Na_2Cl_2
30. Two atoms of bromine react with each other to form a(n) _____ bond.
a. covalent
b. ionic
c. crystal
d. molecular
31. The strong crystal structure of an ionic compound is one reason ionic compounds have _____ melting points.
a. high
b. low
c. moderate
d. variable
32. Which of the following elements is not used to dope in an *n*-type semiconductor?
a. antimony
b. arsenic
c. phosphorus
d. silicon
33. _____ is an unreactive element.
a. Hydrogen
b. Chlorine
c. Helium
d. Sodium

34. One of the elements whose existence was predicted by Mendeleev was _____.
 - a. aluminum
 - b. silicon
 - c. potassium
 - d. germanium
35. Elements in the same group have similar _____.
 - a. electron structures
 - b. numbers of electrons
 - c. densities
 - d. periods
36. Almost all of Earth's atmosphere is made up of _____.
 - a. metals
 - b. nonmetals
 - c. metalloids
 - d. synthetics
37. Modern periodic law states that properties of elements repeat in a regular pattern when the elements are arranged in order of increasing _____.
 - a. density
 - b. atomic mass
 - c. atomic number
 - d. periodicity
38. Which of the following elements is a metal?
 - a. Boron
 - b. Nitrogen
 - c. Magnesium
 - d. Carbon
39. Which of the following is an example of periodicity?
 - a. eating breakfast
 - b. hitting a home run
 - c. writing a letter
 - d. sneezing
40. Dobereiner's classification system was based on groups of elements he called _____.
 - a. families
 - b. periods
 - c. groups
 - d. triads
41. Columns of the periodic table are known as _____.
 - a. groups
 - b. periods
 - c. similarities
 - d. rows
