K/U Knowledge/Understanding T/I Thinking/Investigation C Communication A Application

For each question, select the best answer from the four alternatives.

1. Wind is matter because it has which two properties? (1.1) K/U
   (a) mass and motion
   (b) mass and volume
   (c) volume and space
   (d) mass and sound
2. Which statement is part of Dalton's atomic theory? (1.2) K/U
   (a) Atoms can be created or destroyed.
   (b) All atoms are identical.
   (c) All matter is made up of atoms.
   (d) Atoms can be divided into smaller parts.
3. What does an atom become when it loses an electron? (1.3) K/U
   (a) a positively charged anion
   (b) a negatively charged anion
   (c) a positively charged cation
   (d) a negatively charged cation
4. Which of the following pairs of atoms are isotopes? (1.4) K/U
   (a) K-39 and K-40
   (b) F-19 and Ne-19
   (c) C-12 and N-14
   (d) H-3 and He-3
5. Which is shown in a Bohr–Rutherford diagram but not shown in a Lewis diagram? (1.5) K/U
   (a) all the electrons in the atom
   (b) the symbol of the element
   (c) the valence electrons
   (d) the location of the element on the periodic table
6. Which scientist is given credit for developing the periodic table upon which the current periodic table is based? (1.6) K/U
   (a) Newlands
   (b) Meyer
   (c) Moseley
   (d) Mendeleev
7. Which property of an element decreases as you proceed from left to right across a row on the periodic table? (1.7) K/U
   (a) atomic radius
   (b) ionic radius
   (c) ionization energy
   (d) electron affinity
8. What makes up an ionic compound? (2.1) K/U
   (a) one anion and one cation
   (b) huge numbers of anions and cations
   (c) molecules
   (d) uncharged atoms
9. What type of bond holds the atoms in a molecule together? (2.2) K/U
   (a) ionic
   (b) metallic
   (c) covalent
   (d) Lewis
10. What is the ability of an atom, when bonded, to attract electrons to itself? (2.3) K/U
    (a) bond character
    (b) ionization energy
    (c) electron affinity
    (d) electronegativity
11. Which is the correct chemical formula for the ionic compound magnesium chloride? (2.4) K/U
    (a) MgCl
    (b) Mg_2Cl
    (c) Mg_2Cl_2
    (d) $MgCl_2$
12. What is the correct name of the compound whose chemical formula is SnO? (2.4) K/U
    (a) tin oxide
    (b) tin(I) oxide
    (c) tin(II) oxide
    (d) tin(IV) oxide
13. Which of the following compounds is an example of an artificial sweetener? (2.5) K/U
    (a) sucralose
    (b) glucose
    (c) sucrose
    (d) fructose
14. Which of the following is an example of a non-renewable resource? (3.1) K/U
    (a) fossil fuels
    (b) wood
    (c) water in a river
    (d) bacteria
15. Which of the following insect repellents is a synthetic compound? (3.2) K/U
    (a) garlic
    (b) citronella oil
    (c) geranium oil
    (d) DEET

16. What determines how polar a polar bond is? (3.3) K/U
    (a) whether the bonded atoms have gained electrons or lost electrons
    (b) the electronegativity difference of the bonded atoms
    (c) the difference in ionization energy of the bonded atoms
    (d) the size of the bonded atoms
17. Which of the following properties is characteristic of a compound that contains weak intermolecular forces? (3.4) K/U
    (a) gas at room temperature
    (b) extremely high melting point
    (c) soft and flexible
    (d) liquid at room temperature
18. Which of the following is the strongest type of intermolecular force? (3.4) K/U
    (a) polar force
    (b) dipole–dipole force
    (c) London dispersion force
    (d) hydrogen bond
19. Which of the following is an important physical property of water? (3.5) K/U
    (a) low melting point
    (b) high boiling point
    (c) low surface tension
    (d) low density compared to its solid form
20. For which of these products would a company most likely try to develop a green alternative? (3.6) K/U
    (a) a product made from renewable raw materials
    (b) a product that functions efficiently
    (c) a product that presents a potential problem to human health
    (d) a product that decomposes into environmentally safe substances
21. Which of the following is an example of a green solvent? (3.6) K/U
    (a) alcohol
    (b) biodegradable plastic
    (c) recycled fleece
    (d) water

Indicate whether each statement is true or false. If you think the statement is false, rewrite it to make it true.

22. Laws change over time as new knowledge is discovered. (1.1) K/U
23. Thomson discovered the electron by using a cathode ray tube. (1.2) K/U
24. According to the octet rule, atoms are stable when they contain full valence shells. (1.3) K/U
25. A group is a horizontal row on the periodic table. (1.5) K/U
26. Mendeleev arranged his periodic table according to increasing atomic number. (1.6) K/U
27. Ionization energy is the amount of energy needed to remove a valence electron from an atom in the gaseous state. (1.7) K/U
28. Solid ionic compounds conduct an electric current. (2.1) K/U
29. A molecular element is made of at least two different kinds of elements. (2.2) K/U
30. Elements with similar electronegativities form a covalent bond. (2.3) K/U
31. The name of the molecular compound NO is nitrogen oxide. (2.4) K/U
32. Research involving synthetic molecules has provided many options for alternative sweeteners. (2.5) K/U
33. High fructose corn syrup is an example of a carbohydrate sweetener. (2.5) K/U
34. Both recycling and upcycling involve converting wastes into new products. (3.1) K/U
35. Repellents contain compounds that kill insects outright. (3.2) K/U
36. You can predict the approximate melting point of a molecular compound if you know how polar it is. (3.3) K/U
37. A non-polar molecule cannot contain polar bonds. (3.3) K/U
38. Intermolecular forces are stronger than chemical bonds. (3.4) K/U
39. Hydrogen bonds are important in determining the shape and function of large molecules, such as proteins. (3.4) K/U
40. Because of hydrogen bonds, water has unusually high melting and boiling points. (3.5) K/U
41. Recycling is the strategy of making a high-value retail product from something that otherwise would have been garbage. (3.6) K/U