Periodic Table

1. Which element is a liquid at 305 K and

7. In the ground state, which atom has a completely filled valence electron shell?

(1) C (3) Ne

(2) V (4) Sb

8. The elements on the Periodic Table are arranged in order of increasing

(1) atomic number

(2) mass number

(3) number of isotopes

(4) number of moles

9. Which element has the highest melting point?

(1) tantalum (3) osmium

(2) rhenium (4) hafnium

10. At STP, both diamond and graphite are solids composed of carbon atoms. These solids have

(1) the same crystal structure and the same

properties

(2) the same crystal structure and different

properties

(3) different crystal structures and the same

properties

(4) different crystal structures and different

properties

1.0 atmosphere?

(1) magnesium (3) gallium

(2) fluorine (4) iodine

2. Which list of elements consists of a metal, a

metalloid, and a nonmetal?

(1) Li, Na, Rb (3) Sn, Si, C

(2) Cr, Mo, W (4) O, S, Te

3. At STP, which physical property of aluminum

always remains the same from sample to sample?

(1) mass (3) length

(2) density (4) volume

4. Which statement describes a chemical property

of silicon?

(1) Silicon has a blue-gray color.

(2) Silicon is a brittle solid at 20.°C.

(3) Silicon melts at 1414°C.

(4) Silicon reacts with fluorine.

5. Element *X* reacts with chlorine to form an ionic

compound that has the formula *X*Cl2. To which

group on the Periodic Table could element *X*

belong?

(1) Group 1 (3) Group 13

(2) Group 2 (4) Group 15

6. Which general trend is found in Period 3 as the

elements are considered in order of increasing

atomic number?

(1) increasing atomic radius

(2) increasing electronegativity

(3) decreasing atomic mass

(4) decreasing first ionization energy

11. Compared to the atoms of nonmetals in Period 3,

16. Which characteristics both generally *decrease*

when the elements in Period 3 on the Periodic Table are considered in order from left to right?

(1) nonmetallic properties and atomic radius

(2) nonmetallic properties and ionization energy

(3) metallic properties and atomic radius

(4) metallic properties and ionization energy

the atoms of metals in Period 3 have

(1) fewer valence electrons

(2) more valence electrons

(3) fewer electron shells

(4) more electron shells

12. Which elements are malleable and good

conductors of electricity?

(1) iodine and silver (3) tin and silver

(2) iodine and xenon (4) tin and xenon

13. At STP, solid carbon can exist as diamond and

graphite. Compared to the molecular structure

and chemical properties of diamond, graphite

has

(1) a different molecular structure and different

properties

(2) a different molecular structure and the same

properties

(3) the same molecular structure and different

properties

(4) the same molecular structure and the same

Properties

14. Which Group 14 element is classified as a metal?

(1) carbon (3) silicon

(2) germanium (4) tin

15. Which Lewis electron-dot diagram represents an

atom in the ground state for a Group 13 element?

Base your answer to questions 17-21 on the information below:



17.On the grid *below*, mark an appropriate scale on the axis labeled “Ionic

Radius (pm).” [1]

18. On the same grid, plot the data from the data table. Circle and connect the points. [1]



19. Estimate the ionic radius of strontium. [1]

20. State the trend in ionic radius as the elements in Group 2 are considered in order of

increasing atomic number. [1]

21. Explain, in terms of electrons, why the ionic radius of a Group 2 element is smaller than its atomic radius. [1]