

Chemistry
Standard level
Paper 1A

Practice paper

Topic: The Particulate Nature of Matter (SL)

1. Which phase change occurs during deposition?
 - A. Solid to gas
 - B. Gas to solid
 - C. Liquid to solid
 - D. Gas to liquid

2. Which temperature in Kelvin represents the same average kinetic energy as 25 °C?
 - A. 25 K
 - B. 298 K
 - C. 248 K
 - D. 0 K

3. An atom of phosphorus-31 has how many neutrons?
 - A. 15
 - B. 16
 - C. 31
 - D. 46

4. Which atomic model first proposed the existence of a dense, positively charged nucleus?
 - A. Dalton model
 - B. Thomson model
 - C. Rutherford model
 - D. Bohr model

5. Which is an isotope of $^{12}_6\text{C}$?
 - A. $^{12}_7\text{N}$
 - B. $^{13}_6\text{C}$
 - C. $^{14}_7\text{N}$
 - D. $^{12}_5\text{B}$

6. What is the charge of an ion with 13 protons and 10 electrons?
 - A. 3+
 - B. 3-
 - C. 10+
 - D. 13-

7. Which describes a homogeneous mixture?
 - A. Sand and water
 - B. Salt dissolved in water

- C. Oil and vinegar
 - D. Solid sulfur and iron filings
8. In nuclide notation A_ZX , what does A represent?
- A. Atomic number
 - B. Number of protons
 - C. Mass number
 - D. Number of electrons
9. Which particle has the smallest mass?
- A. Proton
 - B. Neutron
 - C. Electron
 - D. Hydrogen atom
10. Which subatomic particles are found in the nucleus?
- A. Protons and electrons
 - B. Neutrons and electrons
 - C. Protons and neutrons
 - D. Electrons only
11. Relative atomic mass is defined as the weighted average mass of an atom relative to:
- A. 1/12 the mass of a carbon-12 atom
 - B. The mass of a hydrogen atom
 - C. The mass of an oxygen atom
 - D. The mass of a proton
12. Which process is exothermic?
- A. Melting
 - B. Sublimation
 - C. Condensation
 - D. Vaporization
13. Which element has the electron configuration $[\text{Ne}] 3s^2 3p^1$?
- A. Sodium
 - B. Magnesium
 - C. Aluminium
 - D. Silicon

14. isotopes of the same element have:
- A. Same mass number, different atomic number
 - B. Same atomic number, different mass number
 - C. Same number of neutrons, different protons
 - D. Different chemical properties
15. What happens to the average kinetic energy of particles as a gas is cooled?
- A. Increases
 - B. Decreases
 - C. Stays the same
 - D. Becomes zero at 0 °C
16. Which describes the 'Plum Pudding' model?
- A. Electrons orbiting a nucleus like planets
 - B. Negative electrons embedded in a positive sphere
 - C. Solid indivisible spheres
 - D. Electrons in discrete energy levels
17. How many electrons are in the ion $^{32}_{16}\text{S}^{2-}$?
- A. 14
 - B. 16
 - C. 18
 - D. 32
18. Which state of matter has a fixed volume but no fixed shape?
- A. Solid
 - B. Liquid
 - C. Gas
 - D. Plasma
19. Which piece of evidence supported the Bohr model?
- A. Alpha particle scattering
 - B. Cathode ray experiment
 - C. Atomic emission spectra
 - D. Discovery of the neutron
20. The mass number of an isotope is 56 and it has 30 neutrons. Identify the element.
- A. Zinc
 - B. Iron
 - C. Nickel

D. Krypton