

Chemistry
Standard level
Paper 2

Practice paper

Topic: The Particulate Nature of Matter (SL)

1. The understanding of the atom has evolved over time through various experimental discoveries.

(a) Describe the 'Plum Pudding' model of the atom proposed by J.J. Thomson. **[2]**

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(b) Explain how the results of Rutherford's gold foil experiment contradicted the Plum Pudding model and led to the Nuclear model. **[3]**

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(c) State one limitation of the Rutherford model that was later addressed by the Bohr model. **[1]**

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2. Chlorine exists as two main isotopes: chlorine-35 and chlorine-37.

(a) Complete the following table for an atom of ^{37}Cl and an ion of ^{35}Cl . **[4]**

Species	Protons	Neutrons	Electrons
37-Cl atom			
35-Cl- ion			

(b) The relative atomic mass of chlorine is 35.45. Calculate the percentage abundance of each isotope. **[3]**

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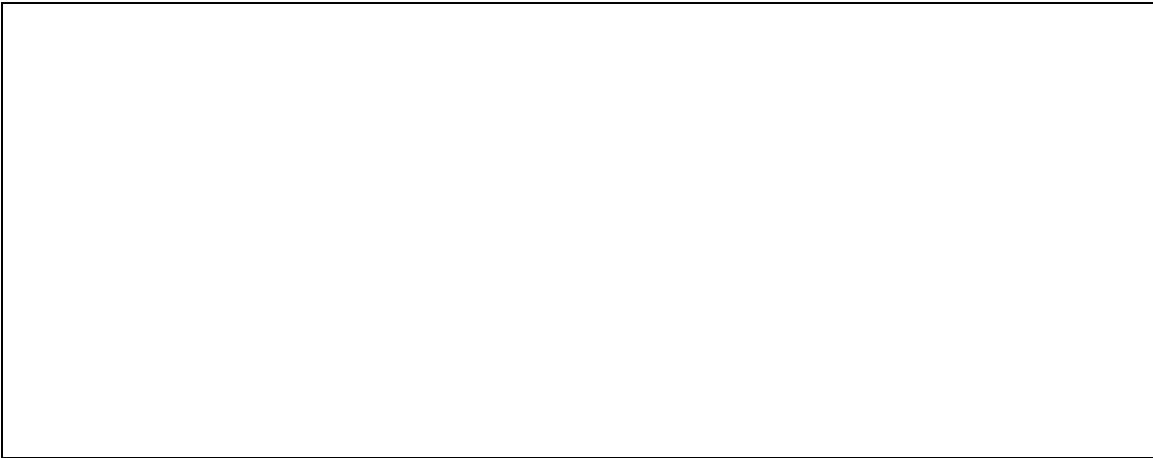
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3. Phase changes involve shifts in both particle arrangement and energy.

(a) Draw diagrams to show the arrangement of particles in a solid and a gas.

[2]



(b) Using the kinetic molecular theory, explain why gases are compressible while solids are not.

[2]

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