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Solid liquid gas particle models (E/F) c1.1 DL

Higher tier criticise the models

AQA GCSE (9-1) Chemistry Only whole outcomes in this document which are higher tier have been **emboldened**.

That is, there are higher tier parts to many of these outcomes. Refer to the speci\_cation for full details.

**Describe** **how** **gas** **volumes** **are** **calculated (*3.5)***

Calculate the concentration of solutions *(3.2)*

Old GCSE Grade

**GCSE** **equivalent**

**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**10**

**1** **1**

**Atomic** **structure** **and** **the** **periodic** **table**

**Bonding,** **structure** **and** **the** **properties** **of** **matter**

**Quantitative** **chemistry**

**Chemical** **changes**

**Energy** **changes**

**The** **rate** **and** **extent** **of** **chemical** **change**

**Organic** **chemistry**

**Chemical** **analysis**

**Chemistry** **of** **the** **atmosphere**

**Using** **the** **Earth's** **resources**

**Formulae** **and** **equations**

A\*\* and A\*

9 and 8

Fully describe the structure of atoms and isotopes, and calculate atomic and mass numbers *(1.1)*

Fully describe the structure and properties of ionic substances *(2.2)*

Fully calculate relative masses and moles *(3.2*

Fully describe the reactions of metals with water, air and acid including the reactivity series *( 4.1)*

Fully describe the di\_erences between exothermic and endothermic reactions

Fully describe how the rate of reaction is measured and the factors that a\_ect it using collision theory (6.1)

Fully describe what crude oil is made from, how it is extracted and distilled and the uses of its parts (7.1)

Fully describe the di\_erences in properties of pure and impure substances and how impure substances are puri\_ed (8.1)

Fully describe the composition and evolution of the Earth's atmosphere (*9.1)*

Fully describe how the Earth's resources could be used more sustainably and explain the consequences of not doing this *(10.1)*

Fully describe how formulae are written

Fully describe the reactions of elements in the periodic table *(1.2)*

Fully describe the structure and properties of molecular substances *(2.2)*

Fully describe the conservation of mass in chemical reactions (3.1)

Fully describe how metals are extracted *( 4.1)*

Fully describe the structure and uses of chemical and fuel cells

Fully describe reversible reactions and the factors that a\_ect dynamic equilibrium (6.2)

Fully describe the structure of alkenes and the process of cracking *(7.1)*

Fully describe how common gases are identi\_ed *(8.2)*

Fully explain how greenhouse gases are leading to global warming (*9.2)*

Fully describe how potable water is produced *(10.1)*

Fully describe how substances are classi\_ed

Fully describe the structure of elements in the periodic table including similarities and differences between those in di\_erent groups *(1.2)*

Fully describe the structure and properties of giant covalent substances *(2.2)*

**Fully** **calculate** **reacting** **masses**

Fully describe the reactions of acids with alkalis, metals, metal hydroxides, oxides and carbonates (4.2)

Fully describe the structure, properties and uses of alcohols, carboxylic acids and esters (7.2)

Fully describe how ions are identi\_ed by chemical and spectroscopic analysis (8.3)

Fully describe common atmospheric pollutants, their sources and negative e\_ects (*9.2)*

Fully describe the production and uses of metals, alloys and polymers *(10.3) (10.1)*

Fully balance all equations

Fully describe the similarities and di\_erences between mixtures and compounds and how mixtures are separated *(1.1)*

Fully describe the structure and properties of metallic substances *(2.3)*

Fully calculate yield and atomic economy (3.3)

Fully describe how salts are formed *( 4.2)*

Fully describe the structure and properties of polymers *(7.3)*

Fully describe the production of fertilisers by the Haber process and their uses *10.4)*

**Fully** **write** **ionic** **equations** **for** **all** **reactions** **involving** **ions**

Fully describe the advances in nanoscience and the uses of nanoparticles *(2.4)*

**Fully** **describe** **how** **gas** **volumes** **are** **calculated (3.5)**

Fully describe the process of electrolysis

Fully describe the biochemistry of amino acids and naturally occurring polymers *(7.3)*

**Fully** **write** **all** **half** **equations**

Fully describe the structure and properties of the di\_erent forms of carbon *(2.3)*

Fully calculate the concentration of solutions (3.2)

A 7 and and B 6

Describe in detail the structure of atoms and isotopes, and calculate atomic and mass numbers *(1.1)*

Describe in detail the structure and properties of ionic substances *(2.2)*

Calculate in detail relative masses and moles  *(3.2*

Describe in detail the reactions of metals with water, air and acid including the reactivity series *( 4.1)*

Describe in detail the di\_erences between exothermic and endothermic reactions

Describe in detail how the rate of reaction is measured and the factors that a\_ect it using collision theory (6.1)

Describe in detail what crude oil is made from, how it is extracted and distilled and the uses of its parts (7.1)

Describe in detail the di\_erence in properties of pure and impure substances and how impure substances are puri\_ed (8.1)

Describe in detail the composition and evolution of the Earth's atmosphere (*9.1)*

Describe in detail how the Earth's resources

could be used more sustainably and explain the Describe in detail how formulae are written consequences of not doing this *(10.1)*

Describe in detail the reactions of elements in the periodic table *(1.2)*

Describe in detail the structure and properties of molecular substances *(2.2)*

Describe in detail the conservation of mass in chemical reactions (3.1)

Describe in detail how metals are extracted *( 4.1)*

Describe in detail the structure and uses of chemical and fuel cells

Describe in detail reversible reactions and the factors that a\_ect dynamic equilibrium (6.2)

Describe in detail the structure of alkenes and the process of cracking *( 7.1)*

Describe in detail how common gases are identi\_ed *(8.2)*

Explain in detail how greenhouse gases are leading to global warming (*9.2)*

Describe in detail how potable water is produced *(10.1)*

Describe in detail how substances are classi\_ed

Describe in detail the structure of elements in the periodic table including similarities and di\_erences between those in di\_erent groups (1.2)

Describe in detail the structure and properties of giant covalent substances *(2.2)*

**Calculate** **in** **detail** **reacting** **masses I(3.2)**

Describe in detail the reactions of acids with alkalis, metals, metal hydroxides, oxides and carbonates (4.2)

Describe in detail the structures, properties and uses of alcohols, carboxylic acids and esters (7.2)

Describe in detail how ions are identi\_ed by chemical and spectroscopic analysis (8.3)

Describe in detail common atmospheric pollutants, their sources and negative e\_ects *9.2)*

Describe in detail the production and uses of metals, alloys and polymers *10.3) (10.1)*

Fully balance almost all equations

Describe in detail the similarities and di\_erences between mixtures and compounds and how mixtures are separated *(1.1)*

Describe in detail the structure and properties of metallic substances (*2.2)*

Calculate in detail yield and atomic economy (3.3)

Describe in detail how salts are formed *( 4.2)*

Describe in detail the structure and properties of polymers *(7.3)*

Describe in detail the production of fertilisers by the Haber process and their uses

**Fully** **write** **ionic** **equations** **for** **almost** **all** **reactions** **involving** **ions**

Describe in detail the advances in nanoscience and the uses of nanoparticles *(2.4)*

**Describe** **in** **detail** **how** **gas** **volumes** **are** **calculated**

Describe in detail the process of electrolysis

Describe in detail the biochemistry of amino acids and naturally occurring polymers *(7.3)*

**Fully** **write** **almost** **all** **half** **equations**

Describe in detail the structure and properties of the di\_erent forms of carbon *(2.3)*

Calculate in detail the concentration of solutions *(3.3*)

5 C and

4

Describe the structure of atoms and isotopes, and calculate atomic and mass numbers *(1.1)*

Describe the structure and properties of ionic substances *(2.2)*

Calculate relative masses and moles *( 3.2)*

Describe the reactions of metals with water, air and acid including the reactivity series *( 4.1)*

Describe the di\_erences between exothermic and endothermic reactions (5.1)

Describe how the rate of reaction is measured and the factors that a\_ect it using collision theory (6.1)

Describe what crude oil is made from, how it is extracted and distilled and the uses of its parts (7.1)

Describe the di\_erences in properties of pure and impure substances and how impure substances are puri\_ed (8.1)

Describe the composition and evolution of the Earth's atmosphere (*9.1)*

Describe how the Earth's resources could

be used more sustainably and explain the Describe how formulae are written consequences of not doing this *(10.1)*

Describe the reactions of elements in the periodic table *(1.2)*

Describe the structure and properties of molecular substances *(2.2)*

Describe the conservation of mass in chemical reactions *(3.1)*

Describe how metals are extracted *( 4.1)*

Describe the structure and uses of chemical and fuel cells (5.2)

Describe reversible reactions and the factors that a\_ect dynamic equilibrium (6.2)

Describe the structure of alkenes and the process of cracking *( 7.1)*

Describe how common gases are identi\_ed  *(8.2)*

Explain how greenhouse gases are leading to global warming (*9.2)*

Describe how potable water is produced *(10.1)*

Describe how substances are classi\_ed

Describe the structure of elements in the periodic table including similarities and di\_erences between those in di\_erent groups *(1.2)*

Describe the structure and properties of giant covalent substances *(2.2)*

**Calculate** **reacting** **masses *(3.2)***

Describe the reactions of acids with alkalis, metals, metal hydroxides, oxides and carbonates (4.2)

Describe the structures, properties and uses of alcohols, carboxylic acids and esters (7.2)

Describe how ions are identi\_ed by chemical and spectroscopic analysis (8.3)

Describe common atmospheric pollutants, their sources and negative e\_ects *9.2)*

Describe the production and uses of metals, alloys and polymers *(10.3)*

Balance most equations

Describe the similarities and di\_erences between mixtures and compounds and how mixtures are separated *(1.1)*

Describe the structure and properties of metallic substances *(2.2)*

Calculate yield and atomic economy *( 3.3)*

Describe how salts are formed *( 4.2)*

Describe the structure and properties of polymers *(7.3)*

Describe the production of fertilisers by the Haber process and their uses (*10.4)*

**Write** **ionic** **equations** **for** **most** **reactions** **involving** **ions**

Describe the advances in nanoscience and the uses of nanoparticles *(2.4)*

Describe the process of electrolysis

Describe the biochemistry of amino acids and naturally occurring polymers *(7.3)*

**Write** **most** **half** **equations**

Describe the structure and properties of the di\_erent forms of carbon *(2.4)*

D 3 and and E 2

Basically describe the structure of atoms and isotopes, and calculate atomic and mass numbers *(1.1)*

Basically describe the structure and properties of ionic substances *(2.2)*

Calculate relative masses *(3.2)*

Basically describe the reactions of metals with water, air and acid including the reactivity series *( 4.1)*

Basically describe the di\_erences between exothermic and endothermic reactions (5.1)

Basically describe how the rate of reaction is measured and the factors that a\_ect it using collision theory (6.1)

Basically describe what crude oil is made from, how it is extracted and distilled and the uses of its parts *(7.1)*

Basically describe the di\_erences in properties of pure and impure substances and how impure substances are puri\_ed (8.1)

Basically describe the composition and evolution of the Earth's atmosphere *(9.1)*

Basically describe how the Earth's resources

could be used more sustainably and explain the Basically describe how formulae are written consequences of not doing this *(10.1)*

Basically describe the reactions of elements in the periodic table *(1.2)*

Basically describe the structure and properties of molecular substances *(2.2)*

Basically describe the conservation of mass in chemical reactions (3.1)

Basically describe how metals are extracted *(4.1)*

Basically describe the structure and uses of chemical and fuel cells *(5.2)*

Basically describe reversible reactions and the factors that a\_ect dynamic equilibrium 6.2

Basically describe the structure of alkenes and the process of cracking*( 7.1)*

Basically describe how common gases are identi\_ed (8.2)

Basically explain how greenhouse gases are leading to global warming *(9.2)*

Basically describe how potable water is produced *(10.1)*

Basically describe how substances are classi\_ed

Basically describe the structure of elements in the periodic table including similarities and di\_erences between those in di\_erent groups  *(1.2)*

Basically describe the structure and properties of giant covalent substances *(2.2)*

Calculating reacting masses – Not accessible at this level

Basically describe the reactions of acids with alkalis, metals, metal hydroxides, oxides and carbonates (4.2)

Basically describe the structures, properties and uses of alcohols, carboxylic acids and esters (7.2)

Basically describe how ions are identi\_ed by chemical and spectroscopic analysis (8.3)

Basically describe common atmospheric pollutants, their sources and negative e\_ects *(9.2)*

Basically describe the production and uses of metals, alloys and polymers (*(10.3)*

Balance some equations

Basically describe the similarities and di\_erences between mixtures and compounds and how mixtures are separated *(1.1)*

Basically describe the structure and properties of metallic substances *(2.1)*

Calculate yield and atomic economy *(3.3)*

Basically describe how salts are formed *(4.2)*

Basically describe the structure and properties of polymers *(7.3)*

Basically describe the production of fertilisers by the Haber process and their uses *10.4)*

Writing ionic equations – Not accessible at this level

Basically describe the advances in nanoscience and the uses of nanoparticles *(2.4)*

Describing how gas volumes are calculated – Not accessible at this level

Basically describe the process of electrolysis (4.3)

Basically describe the biochemistry of amino acids and naturally occurring polymers (7.3)

Writing half equations – Not accessible at this level

Basically describe the structure and properties of the di\_erent forms of carbon *(2.3)*

Calculate the concentration of solutions *(3.2)*

F

and 1 G

State that atoms are made from protons, neutrons and electrons *(1.1)*

State the properties of ionic substances *(2.2)*

Calculating relative masses – Not accessible at this level

State the order of reactivity of some metals *(4.1)*

State the simple di\_erence between exothermic and endothermic reactionsv (5.1)

State the factors that a\_ect a rate of reaction *(6.1)*

State what crude oil is made from, how it is extracted and the uses of its parts (7.1)

Describing the composition and evolution of State how impure substances are puri\_ed *( 8.1)* the Earth’s atmosphere – Not accessible at this

Level *(9.1)*

State how the Earth's resources could be used more sustainably *(10.1)*

Describing how formulae are written – Not accessible at this level

Identify metals and non-metals in the periodic table *(1.2)*

State the properties of molecular substances *(2.2)*

State the de\_nition of conservation of mass in chemical reactions *(3.1)*

State the di\_erent ways in which metals are extracted *(4.1)*

Describing the structure and uses of chemical and fuel cells – Not accessible at this level

State the di\_erence between reversible and irreversible reactions  *( 6.2)*

State the di\_erence between alkenes and alkanes *(7.1 + 7.2)*

State how common gases are identi\_ed  *( 8.2)*

State that greenhouse gases are leading to global warming *(9.2)*

State how potable water is produced *( 10.1)*

Describing how substances are classi\_ed – Not accessible at this level

Structure of elements – Not accessible at this level

State the properties of giant covalent substances *(2.2)*

Calculating reacting masses – Not accessible at this level

Describing the reactions of acids – Not accessible at this level

Describing structures, properties and uses of alcohols, carboxylic acids and esters – Not accessible at this level

Describing how ions are identi\_ed – Not accessible at this level

State examples of common atmospheric pollutants, their sources and negative e\_ects *(9.2)*

State that alloys are mixtures of metals (*(10.3)*

Balancing equations – Not accessible at this level

State the similarities and differences between mixtures and compounds *(1.1)*

State the properties of metallic substancesI (2.2)

Calculating yield and atomic economy – Not accessible at this level

State how salts are formed *( 4.2)*

State that polymers are made from repeating units *(7.3)*

Write the balanced equation for the Haber process *(10.4)*

Writing ionic equations – Not accessible at this level

State the uses of nanoparticles *(2.4)*

Describing how gas volumes are calculated – Not accessible at this level

State that electrolysis separates compounds *(4.3)*

Describing the biochemistry of amino acids and polymers – Not accessible at this level

Writing half equations – Not accessible at this level

State the properties of the di\_erent forms of carbon *(2.3)*

Calculating the concentration of solutions – Not accessible at this level

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