(c) $[:\ddot{\underset{\cdot\cdot}{Br}}:]^{-}$ $[Mg]^{2+}$ $[:\ddot{\underset{\cdot\cdot}{Br}}:]^{-}$

4. (a) $[O]^{2-}$ $[:\ddot{\underset{\cdot\cdot}{C}}:]^{4+}$ $[O]^{2-}$

(b) $[:\ddot{\underset{\cdot\cdot}{F}}:]^{+}$

$[:\ddot{\underset{\cdot\cdot}{F}}:]^{+}$ $[\underset{\cdot\cdot}{P}]^{3-}$ $[:\ddot{\underset{\cdot\cdot}{F}}:]^{+}$

(c) $[:\ddot{\underset{\cdot\cdot}{Cl}}:]^{-}$

$[:\ddot{\underset{\cdot\cdot}{Cl}}:]^{-}$ $[\underset{\cdot\cdot}{Si}]^{4+}$ $[:\ddot{\underset{\cdot\cdot}{Cl}}:]^{-}$

$[:\ddot{\underset{\cdot\cdot}{Cl}}:]^{-}$

5. (a) $:\ddot{\underset{\cdot}{Cl}}:$

(b) $\cdot\underset{\cdot}{\overset{\cdot}{N}}:$

(c) $H\cdot$

Assessment

Atomic theory and bonding

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1. C **2.** A **3.** B **4.** E **5.** D **6.** B **7.** D **8.** D **9.** D **10.** A **11.** B **12.** B **13.** A **14.** A **15.** C **16.** B

Section 4.2 Names and Formulas of Compounds

Comprehension

Multivalent metals and polyatomic ions

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1. **(a)** a compound made up of a metal and a non-metal
(b) a metal that has more than one ion charge
(c) an ion composed of more than one type of atom joined by covalent bonds

2.

	Positive ion	Negative ion	Formula	Compound name
(a)	Pb^{2+}	O^{2-}	PbO	lead(II) oxide
(b)	Sb^{4+}	S^{2-}	**SbS_2**	**antimony(IV) sulphide**
(c)	**Tl^{+}**	**Cl^{-}**	TlCl	**thallium(I) chloride**
(d)	**Sn^{2+}**	**F^{-}**	**SnF_2**	tin(II) fluoride
(e)	**Mo^{3+}**	**S^{2-}**	Mo_2S_3	**molybdenum(III) sulphide**
(f)	Rh^{4+}	Br^{-}	**$RhBr_4$**	**rhodium(IV) bromide**
(g)	**Cu^{+}**	**Te^{2-}**	**Cu_2Te**	copper(I) telluride
(h)	**Nb^{5+}**	**I^{-}**	NbI_5	**niobium(V) iodide**
(i)	Pd^{2+}	Cl^{-}	**$PdCl_2$**	**palladium(II) chloride**

3. **(a)** $MnCl_2$
(b) Cr_2S_3
(c) TiO_2
(d) UF_6
(e) NiS
(f) V_2O_5
(g) Re_3Ar_7
(h) Pt_3N_4
(i) $NiCN_2$
(j) Bi_3P_5

4.

	Ions	Formula	Compound name
(a)	K^{+} NO_3^{-}	KNO_3	potassium nitrate
(b)	Ca^{2+} CO_3^{2-}	**$CaCO_3$**	**calcium carbonate**
(c)	Li^{+} HSO_4^{-}	**$LiHSO_4$**	**lithium bisulphate or lithium hydrogen sulphate**
(d)	Mg^{2+} SO_3^{2-}	**$MgSO_3$**	**magnesium sulphite**
(e)	Sr^{2+} CH_3COO^{-}	**$Sr(CH_3COO)_2$**	**strontium acetate**
(f)	NH_4^{+} $Cr_2O_7^{2-}$	**$(NH_4)_2Cr_2O_7$**	**ammonium dichromate**
(g)	Na^{+} MnO_4^{-}	**$NaMnO_4$**	**sodium permanganate**
(h)	Ag^{+} ClO_3^{-}	**AgClO**	**silver hypochlorite**
(i)	Cs^{+} OH^{-}	**CsOH**	**cesium hydroxide**
(j)	Ba^{2+} CrO_4^{2-}	**$BaCrO_4$**	**barium chromate**

5. **(a)** $Ba(HSO_4)_2$
(b) $NaClO_3$
(c) K_2CrO_4
(d) $Ca(CN)_2$
(e) KOH
(f) $Ca_3(PO_4)_2$
(g) $Al_2(SO_4)_3$
(h) $CdCO_3$
(i) $AgNO_2$
(j) NH_4HCO_3

Comprehension

Chemical names and formulas of ionic compounds

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1. **(a)** beryllium sulphide
(b) mercury(II) nitride
(c) copper(II) nitrate
(d) silver oxide
(e) cobalt(II) bromide
(f) bismuth(V) phosphate
(g) calcium fluoride

(h) manganese(III) oxide
(i) chromium(III) sulphate
(j) zinc chloride
(k) nickel(II) hydroxide
(l) potassium dichromate
(m) scandium fluoride
(n) sodium iodide
(o) lead(II) carbonate
(p) rubidium chlorite
(q) potassium phosphide
(r) magnesium cyanide
(s) tin(II) sulphide
(t) sodium bicarbonate or sodium hydrogen carbonate

2. (a) $AlBr_3$
(b) PtS
(c) $SrSO_3$
(d) Sc_2O_3
(e) $Ti(NO_2)_4$
(f) $(NH_4)_2SO_4$
(g) Li_2Se
(h) $Pb(HSO_4)_2$
(i) $NaCH_3COO$
(j) CsCl
(k) $Cd(OH)_2$
(l) $Zn_3(PO_4)_2$
(m) $BaCl_2$
(n) $Sn(MnO_4)_2$
(o) LiClO
(p) $Au_2(SO_4)_3$
(q) $NaNO_3$
(r) $CrCl_3$
(s) K_2CO_3
(t) $Fe(HSO_4)_3$

Comprehension

Chemical names and formulas of covalent compounds

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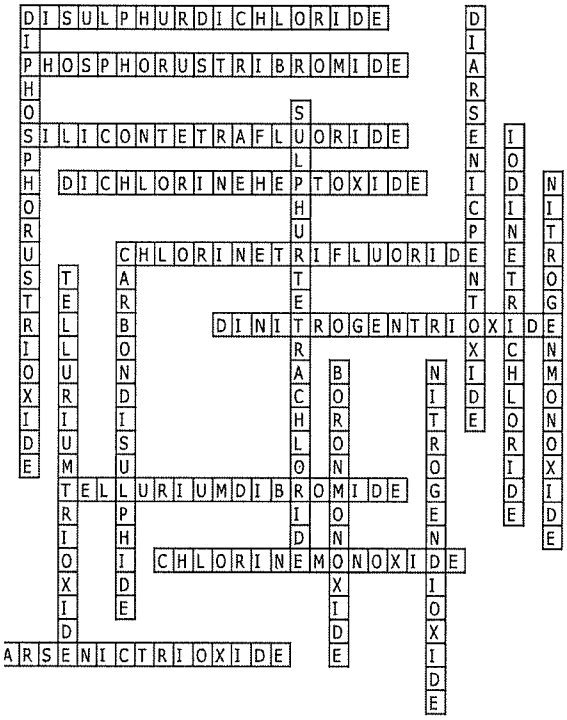
1. a compound consisting of two non-metals; a compound that involves the sharing of electrons
2. covalent bond
3. prefixes: mono, di, tri, tetra, penta, hexa, hepta, octa, nona, deca
4. **(a)** SiO_2
(b) ClO_2
(c) TeO_2
(d) SeO_3
(e) CS_2
(f) $AsCl_3$
(g) ClO_7
(h) SeF_2
(i) N_2O_5
(j) N_2O
(k) $AsBr_4$
(l) $AsCl_5$
(m) S_2O_5
(n) SCl
(o) PCl_3
(p) P_2O_5

5.

COVALENT COMPOUNDS



Word List
Arsoenic trioxide
Boron monoxide
Carbon disulphide
Chlorine monoxide
Diarsenic pentoxide
Dichlorine heptoxide
Dinitrogen trioxide
Disulphur dichloride
Iodine trichloride
Nitrogen dioxide
Nitrogen monoxide
Phosphorus tribromide
Silicon tetrafluoride
Sulphur tetrachloride
Tellurium dibromide
Tellurium trioxide

ACROSS	DOWN
1. S_2Cl_2	1. P_2O_3
3. PBr_3	2. As_2O_5
5. SiF_4	4. SCl_4
7. Cl_2O_7	6. ICl_3
9. ClF_3	8. NO
11. N_2O_3	9. CS_2
14. $TeBr_2$	10. TeO_3
15. ClO	12. BO
16. AsO_3	13. NO_2