

Year 11 Chemistry
Elemental Test: Bonding

1. On the diagram of a periodic table below, draw an arrow to show the trend of increasing electronegativity.

1 H hydrogen 1.007 94(7)																	2 He helium 4.002 603(2)	
3 Li lithium 6.941(2)	4 Be beryllium 9.012 183(3)											5 B boron 10.811(7)	6 C carbon 12.0107(8)	7 N nitrogen 14.0064(3)	8 O oxygen 15.999(4)	9 F fluorine 18.998 403(3)	10 Ne neon 20.1797(6)	
11 Na sodium 22.989 768 28(2)	12 Mg magnesium 24.3050(8)											13 Al aluminium 26.981 538 6(8)	14 Si silicon 28.0855(3)	15 P phosphorus 30.973 762(2)	16 S sulfur 32.06(5)	17 Cl chlorine 35.453(2)	18 Ar argon 39.948(1)	
19 K potassium 39.0983(1)	20 Ca calcium 40.078(4)	21 Sc scandium 44.955 912(6)	22 Ti titanium 47.88(7)	23 V vanadium 50.9415(1)	24 Cr chromium 51.9961(6)	25 Mn manganese 54.938 045(3)	26 Fe iron 55.845(2)	27 Co cobalt 58.933 195(5)	28 Ni nickel 58.6934(2)	29 Cu copper 63.546(3)	30 Zn zinc 65.408(4)	31 Ga gallium 69.723(1)	32 Ge germanium 72.64(1)	33 As arsenic 74.921 6(2)	34 Se selenium 78.96(3)	35 Br bromine 79.904(1)	36 Kr krypton 83.798(2)	
37 Rb rubidium 85.4678(3)	38 Sr strontium 87.62(1)	39 Y yttrium 88.905 848(3)	40 Zr zirconium 91.224(2)	41 Nb niobium 92.906 38(3)	42 Mo molybdenum 95.94(1)	43 Tc technetium 98	44 Ru ruthenium 101.07(2)	45 Rh rhodium 102.905 50(2)	46 Pd palladium 106.42(1)	47 Ag silver 107.868 2(2)	48 Cd cadmium 112.411(8)	49 In indium 114.818(1)	50 Sn tin 118.710(2)	51 Sb antimony 121.757(1)	52 Te tellurium 127.6(3)	53 I iodine 126.904 47(3)	54 Xe xenon 131.29(8)	
55 Cs caesium 132.905 451 9(3)	56 Ba barium 137.327(2)	57-71 lanthanoids		72 Hf hafnium 178.49(2)	73 Ta tantalum 180.947 88(2)	74 W tungsten 183.84(1)	75 Re rhenium 186.207(1)	76 Os osmium 190.23(3)	77 Ir iridium 192.222(1)	78 Pt platinum 195.084(8)	79 Au gold 196.966 569(4)	80 Hg mercury 200.59(2)	81 Tl thallium 204.38(3)	82 Pb lead 207.2(1)	83 Bi bismuth 208.980 4(1)	84 Po polonium 209	85 At astatine 210	86 Rn radon 222
87 Fr francium 223	88 Ra radium 226	89-103 actinoids		104 Rf rutherfordium 261	105 Db dubnium 262	106 Sg seaborgium 266	107 Bh bohrium 264	108 Hs hassium 277	109 Mt meitnerium 268	110 Ds darmstadtium 271	111 Rg roentgenium 272							

/1

2. State the chemical bond that forms between the following atoms:
 a) Sodium and chlorine b) Fluorine and aluminium c) Iodine and bromine
 d) Sulfur and oxygen e) Sodium and lithium

/5

3. State what a “polar bond” is and state why it occurs.

/2

4. State whether hydrogen bonding is a primary or secondary force. State a reason for your choice.

/2

5. State which of the forces below is the strongest and which is the weakest.
 Dispersion forces, Metallic bonding, Dipole-dipole attraction

/2

6. Draw electron dot diagrams for the following:

- a) Water b) PCl_3 c) HCl

/3

7. Draw the shapes of the molecules in question 6, showing any bond and molecular polarities.

/6

8. State which of the following substances you would expect to have the highest melting point.
 Iron oxide, carbon dioxide, sulfur dichloride

/1

9. Explain why substances with metallic bonding:

- a) are malleable
 b) conduct electricity well

/2

/2

10. Explain why dissolved ionic substances conduct electricity.

/2

TOTAL /28