

1 <b>H</b> Hydrogen 1																	2 <b>He</b> Helium 4				
2 <b>Li</b> Lithium 3	3 <b>Be</b> Beryllium 9															5 <b>B</b> Boron 11	6 <b>C</b> Carbon 12	7 <b>N</b> Nitrogen 14	8 <b>O</b> Oxygen 16	9 <b>F</b> Fluorine 19	10 <b>Ne</b> Neon 20
11 <b>Na</b> Sodium 23	12 <b>Mg</b> Magnesium 24															13 <b>Al</b> Aluminium 27	14 <b>Si</b> Silicon 28	15 <b>P</b> Phosphorus 31	16 <b>S</b> Sulfur 32	17 <b>Cl</b> Chlorine 35.5	18 <b>Ar</b> Argon 40
19 <b>K</b> Potassium 39	20 <b>Ca</b> Calcium 40	21 <b>Sc</b> Scandium 45	22 <b>Ti</b> Titanium 48	23 <b>V</b> Vanadium 51	24 <b>Cr</b> Chromium 52	25 <b>Mn</b> Manganese 55	26 <b>Fe</b> Iron 56	27 <b>Co</b> Cobalt 59	28 <b>Ni</b> Nickel 59	29 <b>Cu</b> Copper 64	30 <b>Zn</b> Zinc 65	31 <b>Ga</b> Gallium 70	32 <b>Ge</b> Germanium 73	33 <b>As</b> Arsenic 75	34 <b>Se</b> Selenium 79	35 <b>Br</b> Bromine 80	36 <b>Kr</b> Krypton 84				
37 <b>Rb</b> Rubidium 86	38 <b>Sr</b> Strontium 88	39 <b>Y</b> Yttrium 89	40 <b>Zr</b> Zirconium 91	41 <b>Nb</b> Niobium 93	42 <b>Nb</b> Niobium 96	43 <b>Tc</b> Technetium 98	44 <b>Ru</b> Ruthenium 101	45 <b>Rh</b> Rhodium 103	46 <b>Pd</b> Palladium 106	47 <b>Ag</b> Silver 108	48 <b>Cd</b> Cadmium 112	49 <b>In</b> Indium 115	50 <b>Sn</b> Tin 119	51 <b>Sb</b> Antimony 122	52 <b>Te</b> Tellurium 128	53 <b>I</b> Iodine 127	54 <b>Xe</b> Xenon 131				
55 <b>Cs</b> Cesium 133	56 <b>Ba</b> Barium 137	57 <b>La</b> Lanthanum 139	72 <b>Hf</b> Hafnium 179	73 <b>Ta</b> Tantalum 181	74 <b>W</b> Tungsten 184	75 <b>Re</b> Rhenium 186	76 <b>Os</b> Osmium 190	77 <b>Ir</b> Iridium 192	78 <b>Pt</b> Platinum 195	79 <b>Au</b> Gold 197	80 <b>Hg</b> Mercury 201	81 <b>Tl</b> Thallium 204	82 <b>Pb</b> Lead 207	83 <b>Bi</b> Bismuth 209	84 <b>Po</b> Polonium 210	85 <b>At</b> Astatine 210	86 <b>Rn</b> Radon 222				
87 <b>Fr</b> Francium 223	88 <b>Ra</b> Radium 226	89 <b>Ac</b> Actinium 227	104 <b>Unq</b> Unquadrium 257	105 <b>Unp</b> Unpentium 260	106 <b>Unh</b> Unhexium 263	107 <b>Uns</b> Unseptium 262	108 <b>Uno</b> Unoctium 265	109 <b>Une</b> Unennium 266													

58 <b>Ce</b> Cerium 141	59 <b>Pr</b> Praseodymium 141	60 <b>Nd</b> Neodymium 144	61 <b>Pm</b> Promethium 147	62 <b>Sm</b> Samarium 150	63 <b>Eu</b> Europium 152	64 <b>Gd</b> Gadolinium 157	65 <b>Tb</b> Terbium 159	66 <b>Dy</b> Dysprosium 163	67 <b>Ho</b> Holmium 165	68 <b>Er</b> Erbium 167	69 <b>Tm</b> Thulium 169	70 <b>Yb</b> Ytterbium 173	71 <b>Lu</b> Lutetium 175
90 <b>Th</b> Thorium 232	91 <b>Pa</b> Protactinium 231	92 <b>U</b> Uranium 238	93 <b>Np</b> Neptunium 237	94 <b>Pu</b> Plutonium 244	95 <b>Am</b> Americium 243	96 <b>Cm</b> Curium 247	97 <b>Bk</b> Berkelium 247	98 <b>Cf</b> Californium 249	99 <b>Es</b> Einsteinium 254	100 <b>Fm</b> Fermium 253	101 <b>Md</b> Mendelevium 256	102 <b>No</b> Nobelium 254	103 <b>Lr</b> Lawrencium 257

Write the nuclear equations for the **alpha** or **beta** decay for the radioactive isotopes below

- U-235 decays by the emission of an  $\alpha$ -particle
- P-32 decays by the emission of an  $\beta$ -particle
- Pb-209 decays by the emission of an  $\beta$ -particle
- Np-237 decays by the emission of an  $\alpha$ -particle
- Sr-90 decays by the emission of an  $\beta$ -particle
- Ra-224 decays by the emission of an  $\alpha$ -particle
- Bi-211 decays by the emission of an  $\alpha$ -particle
- H-3 decays by the emission of an  $\beta$ -particle
- Po-204 decays by the emission of an  $\alpha$ -particle
- Ni-63 decays by the emission of an  $\beta$ -particle