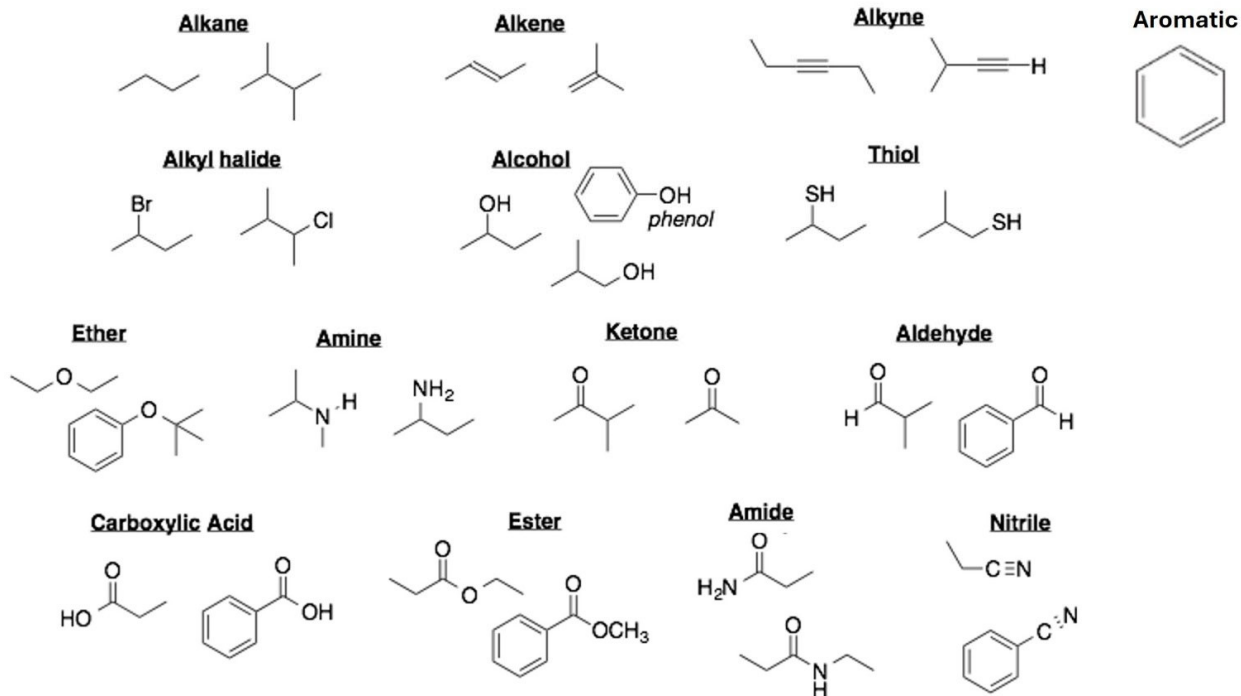


Know the abbreviations and names of shaded elements.
A copy of the periodic table provided on the exam is linked from the same page you found this document.

| | | | | | | | | | | | | | | | | | | |
|--------|-----------|-----------|------------|---------------|----------|------------|------------|-----------|------------|--------------|-------------|-------------|----------|-----------|-----------|-------------|----------|-----------|
| PERIOD | 1 | | | | | | | | | | | | | | | | | 18 |
| | 1A | | | | | | | | | | | | | | | | | 8A |
| 1 | 1 | | | | | | | | | | | | | | | | | 2 |
| | H | | | | | | | | | | | | | | | | | He |
| | Hydrogen | | | | | | | | | | | | | | | | | Helium |
| 2 | 3 | 4 | | | | | | | | | | | | | | | 10 | |
| | Li | Be | | | | | | | | | | | | | | | Ne | |
| | Lithium | Beryllium | | | | | | | | | | | | | | | Neon | |
| 3 | 11 | 12 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | | 18 | |
| | Na | Mg | IIIB | IVB | VB | VIB | VIB | VIB | VIB | IXB | XB | XIB | XIIB | | | | | Ar |
| | Sodium | Magnesium | | | | | | | | | | | | | Argon | | | |
| 4 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 |
| | K | Ca | Sc | Ti | V | Cr | Mn | Fe | Co | Ni | Cu | Zn | Ga | Ge | As | Se | Br | Kr |
| | Potassium | Calcium | Scandium | Titanium | Vanadium | Chromium | Manganese | Iron | Cobalt | Nickel | Copper | Zinc | Gallium | Germanium | Arsenic | Selenium | Bromine | Krypton |
| 5 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 |
| | Rb | Sr | Y | Zr | Nb | Mo | Tc | Ru | Rh | Pd | Ag | Cd | In | Sn | Sb | Te | I | Xe |
| | Rubidium | Strontium | Yttrium | Zirconium | Niobium | Molybdenum | Technetium | Ruthenium | Rhodium | Palladium | Silver | Cadmium | Indium | Tin | Antimony | Tellurium | Iodine | Xenon |
| 6 | 55 | 56 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 |
| | Cs | Ba | Lu | Hf | Ta | W | Re | Os | Ir | Pt | Au | Hg | Tl | Pb | Bi | Po | At | Rn |
| | Cesium | Barium | Lutetium | Hafnium | Tantalum | Tungsten | Rhenium | Osmium | Iridium | Platinum | Gold | Mercury | Thallium | Lead | Bismuth | Polonium | Astatine | Radon |
| 7 | 87 | 88 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 |
| | Fr | Ra | Lr | Rf | Db | Sg | Bh | Hs | Mt | Ds | Rg | Cn | Nh | Fl | Mc | Lv | Ts | Og |
| | Francium | Radium | Lawrencium | Rutherfordium | Dubnium | Seaborgium | Bohrium | Hassium | Meitnerium | Darmstadtium | Roentgenium | Copernicium | Nihonium | Flerovium | Moscovium | Livermorium | Tennesse | Oganesson |

| | | | | | | | | | | | | | |
|-----------|---------|--------------|-----------|------------|-----------|-----------|------------|-----------|-------------|-------------|---------|-------------|-----------|
| 57 | 58 | 59 | 60 | 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| La | Ce | Pr | Nd | Pm | Sm | Eu | Gd | Tb | Dy | Ho | Er | Tm | Yb |
| Lanthanum | Cerium | Praseodymium | Neodymium | Promethium | Samarium | Europium | Gadolinium | Terbium | Dysprosium | Holmium | Erbium | Thulium | Ytterbium |
| 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 101 | 102 |
| Ac | Th | Pa | U | Np | Pu | Am | Cm | Bk | Cf | Es | Fm | Md | No |
| Actinium | Thorium | Protactinium | Uranium | Neptunium | Plutonium | Americium | Curium | Berkelium | Californium | Einsteinium | Fermium | Mendelevium | Nobelium |



| Soluble compounds contain | Except when paired with |
|---|--|
| Group I metal cations or NH ₄ ⁺ | None |
| CH ₃ COO ⁻ , NO ₃ ⁻ , ClO ₃ ⁻ or ClO ₄ ⁻ | None |
| Cl ⁻ , Br ⁻ , or I ⁻ | Ag ⁺ , Hg ₂ ²⁺ , Pb ²⁺ |
| SO ₄ ²⁻ | Ag ⁺ , Hg ₂ ²⁺ , Pb ²⁺ , Ca ²⁺ , Sr ²⁺ , Ba ²⁺ |
| Insoluble compounds contain | Except when paired with |
| CO ₃ ²⁻ , CrO ₄ ²⁻ , PO ₄ ³⁻ , or SO ₃ ²⁻ | Group I cations or NH ₄ ⁺ |
| S ²⁻ or OH ⁻ | Group I cations or NH ₄ ⁺ , or Ba ²⁺ |
| Ag ⁺ , Hg ₂ ²⁺ , and Pb ²⁺ | CH ₃ COO ⁻ , NO ₃ ⁻ , ClO ₃ ⁻ or ClO ₄ ⁻ |

Compounds listed as "slightly soluble" are treated as insoluble.

| Strong Acids | Strong Bases |
|--|----------------------------------|
| HCl, HBr, HI, HNO ₃ , HClO ₄ , H ₂ SO ₄ | Group I & II metal hydroxides |

| Prefix | Symbol | Multiplier |
|--------|---------|------------------|
| tera | T | 10 ¹² |
| giga | G | 10 ⁹ |
| mega | M | 10 ⁶ |
| kilo | k | 10 ³ |
| deci | d | 10 ⁻¹ |
| centi | c | 10 ⁻² |
| milli | m | 10 ⁻³ |
| micro | μ or mc | 10 ⁻⁶ |
| nano | n | 10 ⁻⁹ |

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Nuclear Decay Reactions

| Type of radiation | Symbol | Mass number | charge |
|-------------------|-----------------------------|-------------|--------|
| Alpha particle | α or ${}^4_2\text{He}$ | 4 | 2+ |
| Beta particle | β or ${}^0_{-1}e$ | 0 | 1- |
| Gamma ray | γ or ${}^0_0\gamma$ | 0 | 0 |
| Neutron | 1_0n | 1 | 0 |
| Positron | β ⁺ or 0_1e | 0 | 1+ |