Name Date

Worksheet 3.1: Electron configuration

**1** Work out the full and condensed electron configurations for the following elements:

|  |  |  |
| --- | --- | --- |
|  | **Full electron configuration** | **Condensed electron configuration** |
| B |  |  |
| S |  |  |
| Cr |  |  |
| Cu |  |  |
| Ge |  |  |

**2** Work out the full and condensed electron configurations for the following ions:

|  |  |  |
| --- | --- | --- |
|  | **Full electron configuration** | **Condensed electron configuration** |
| N3− |  |  |
| S2− |  |  |
| Ti4+ |  |  |
| Co2+ |  |  |
| Rb+ |  |  |

**3** Given the following ground-state electron configurations, write the chemical symbols   
for the atoms:

|  |  |
| --- | --- |
| **Electron configuration** | **Symbol** |
| 1s22s22p5 |  |
| 1s22s22p63s23p64s1 |  |
| 1s22s22p63s23p64s23d5 |  |
| [Ne]3s23p2 |  |
| [Ar]4s23d104p4 |  |

**4** Identify the regions of the electromagnetic spectrum the following electronic transitions in a   
hydrogen emission spectrum belong to (*n* is the number of the main energy level):

|  |  |
| --- | --- |
| **Transition** | **Electromagnetic radiation** |
| *n* = 3 → *n* = 1 |  |
| *n* = 6 → *n* = 2 |  |
| 4p → 3s |  |
| 5d → 2p |  |
| 3d → 1s |  |