

**Marks**  
**4**

- Provide a brief explanation of each of the following terms. (You may include an equation or a diagram where appropriate).

(a) Pauli exclusion principle

(b) the Bohr model of the atom

- Write down the ground state electron configurations for the following elements. The configuration of lithium is given as an example.

**2**

Li	$1s^2 2s^1$
Ne	
Br	

- Sketch the following wave functions as lobe representations. Clearly mark all nodal surfaces and nuclear positions.

**4**(a) a  $2p$  orbital(b) a  $\pi$  molecular orbital