- Define what is meant by an "allotrope". Give an example of a pair of allotropes involving (i) phosphorus and (ii) a pair not involving phosphorus. **2**

Allotropes are different structural forms of the same element.

(i) Phosphorus exists as a number of allotropes, including white, red and black phosphorus. The most common forms are white and red phosphorus which are based on P_4 tetrahedra and linked P_4 tetrahedra respectively. Black phosphorus consists of layers of puckered 6-membered rings.

(ii) Other elements showing allotropes include:

- **carbon – diamond, graphite and fullerenes**
- **oxygen – O_2 and O_3 molecules**
- **sulfur – S_n rings with n = 6 – 20.**