

**Marks**  
**3**

- You may recall from a lecture demonstration or your laboratory work that solid  $\text{CO}_2$  sublimates under ambient conditions while ice melts. Define the terms sublimation and melting.

What is a triple point (*e.g.* in the phase diagram of  $\text{CO}_2$  or  $\text{H}_2\text{O}$ )?

What does the different behaviour of ice and solid  $\text{CO}_2$  indicate about the relative positions of their respective triple points?

- Carbon has a number of allotropes, the two major ones being graphite and diamond. The phase diagram of carbon shows that diamond is not the stable allotrope under normal conditions. Why then does diamond exist under normal conditions?

**1**