

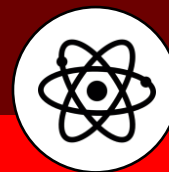
---

2009

---

6 Which one of the following covalent substances could exist as a giant structure?

- A  $\text{SiCl}_4$
- B  $\text{SiO}_2$
- C  $\text{ICl}$
- D  $\text{Cl}_2\text{O}$
- E  $\text{H}_2\text{S}$
- F  $\text{CF}_4$



---

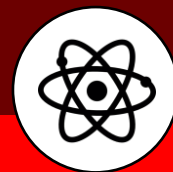
# 2011

---

- 2 A metal, X, is in group III of the periodic table. A non-metal, Y, is in group VI of the periodic table. They react together to form a compound.

What is the formula of the compound?

- A  $X_2Y$
- B  $X_2Y_3$
- C  $X_3Y_2$
- D  $X_3Y_6$
- E  $X_6Y_3$
- 
- 14 Which of the following (A-E) correctly identifies **all** of the compounds from the list below that contain covalent bonds in their structure?
- $CO_2(g)$   $Ca(OH)_2(s)$   $H_2SO_4(l)$   $MgCO_3(s)$   $NaCl(s)$   $Na_2O(s)$   $Na_3PO_4(s)$   $SO_2(g)$   $SiO_2(g)$
- A  $CO_2(g)$ ,  $SO_2(g)$ ,  $SiO_2(g)$
- B  $Ca(OH)_2(s)$ ,  $H_2SO_4(l)$ ,  $MgCO_3(s)$ ,  $NaCl(s)$ ,  $Na_2O(s)$ ,  $Na_3PO_4(s)$
- C  $CO_2(g)$ ,  $Ca(OH)_2(s)$ ,  $H_2SO_4(l)$ ,  $MgCO_3(s)$ ,  $Na_3PO_4(s)$ ,  $SO_2(g)$ ,  $SiO_2(g)$
- D  $NaCl(s)$ ,  $Na_2O(s)$
- E All of the compounds



---

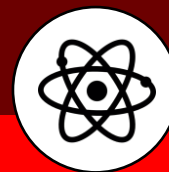
# 2012

---

18 Vanadium is a metal that lies just above zinc in the reactivity series.

Which one of the following could **not** be used to obtain the metal from its ore?

- A electrolysis of the molten chloride
- B heating of the chloride with metallic sodium
- C heating the oxide with metallic aluminium
- D treating a solution of vanadium sulfate with metallic iron
- E treating a solution of vanadium chloride with metallic magnesium



## Structure and Bonding

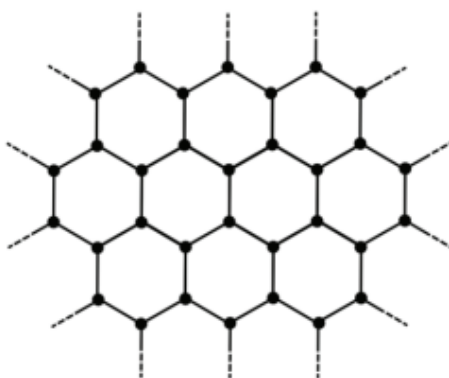
---

# 2014

---

- 22 Graphene is a new material composed of carbon atoms arranged in tightly bound hexagons just one atom thick.

The diagram shows a simplified structure of graphene.



Considering its structure, which of the properties below could be predicted about graphene?

- 1 high melting point
  - 2 good electrical conductivity
  - 3 soluble in water
- A 1 only
- B 2 only
- C 3 only
- D 1 and 2 only
- E 1 and 3 only
- F 2 and 3 only
- G 1, 2 and 3