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CHEMISTRY

PHYSICAL CHEMISTRY

Level & Board	EDEXCEL (A-LEVEL)
TOPIC:	BONDING & STRUCTURE
PAPER TYPE:	QUESTION PAPER - 4
TOTAL QUESTIONS	10
TOTAL MARKS	34

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Bonding & Structure - 4

1. This question is about crystalline solids. Graphite and diamond are crystalline solids at room temperature.

Explain why diamond has a much higher melting temperature than graphite.



(5)

2. Explain why the bond angle in water is 104.5° less than the bond angle 107° in ammonia.

(2)

3. Carbon dioxide CO_2 , has a boiling temperature of 195 K and Sulfur dioxide, SO_2 , has much higher boiling temperature of 263 K. Describe the distinction in boiling temperatures by discussing the intermolecular forces present.

(5)

4. Draw a diagram of the Water molecule, clearly showing its shape. Include any lone pairs of electrons and the value of the bond angle.

(2)

5. Draw a dot-and-cross diagram of a molecule of Nitric acid HNO_3 .

(2)

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6. Draw a dot-and-cross diagram for BCl_3 showing only the outer shell electrons of the atoms. Use your diagram to explain why BCl_3 has a trigonal planar shape with bond angles of 120° .

(3)

7. Explain metallic bonding with diagram.

(4)

8. State what is meant by the term electronegativity and hence explain the polarity, if any, of the bonds in HCl .

(3)

9. Explain why both water and sulfur trioxide molecules have polar bonds but only water is a polar molecule.

(4)

10. Discuss the reasons for the differences in the boiling temperatures of the compounds HF 19.0°C and H₂O 100.0°C

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(4)



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- Founder & CEO of Chemistry Online Tuition Ltd.
- Completed Medicine (M.B.B.S) in 2007
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