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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.

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3. Carbon dioxide CO₂, has a boiling temperature of 195 K and Sulfur dioxide, SO₂, has much higer 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)

(2)

5. Draw a dot-and-cross diagram of a molecule of Nitric acid HNO₃.

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6. Draw a dot-and-cross diagram for BCl₃ showing only the outer shell electrons of the atoms. Use your diagram to explain why BCl₃ has a trigonal planar shape with bond angles of 120°.



(3)

7. Explain metallic bonding with diagram.

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(4)

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

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

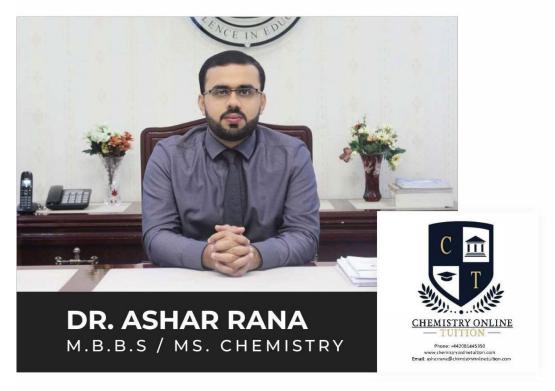
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- · Completed Medicine (M.B.B.S) in 2007
- Tutoring students in UK and worldwide since 2008
- CIE & EDEXCEL Examiner since 2015
- Chemistry, Physics, Math's and Biology Tutor

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