

4.3 Intermolecular Forces & Metallic Bonding

Question Paper

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| Course | DPIB Chemistry |
| Section | 4. Chemical Bonding & Structure |
| Topic | 4.3 Intermolecular Forces & Metallic Bonding |
| Difficulty | Easy |

Time allowed: 20
Score: /10
Percentage: /100

Question 1

Which of the following dipole labels are **not** correct?

- A $\delta^+ \delta^-$ in propanol
C - O
- B $\delta^+ \delta^-$ in propanal
C = O
- C $\delta^+ \delta^-$ in propane
C - H
- D $\delta^+ \delta^-$ in chloropropane
C - Cl

[1 mark]

Question 2

Magnesium oxide has a very high melting temperature.

Which of the following is the best description of its structure and bonding?

- A. Giant ionic
- B. Giant metallic
- C. Macromolecular
- D. Simple molecular

[1 mark]

Question 3

Which of the following compounds is polar?

- A. CCl_4
- B. BF_3
- C. PH_3
- D. CH_3CH_3

[1 mark]

Question 4

Which of the following statements is **not** correct?

- A. The strongest type of intermolecular force in ammonia is hydrogen bonding
- B. The strongest type of intermolecular force in water is hydrogen bonding
- C. The strongest type of intermolecular force in hydrogen chloride is permanent dipole
- D. The strongest type of intermolecular forces in ethanol is permanent dipole

[1 mark]

Question 5

Which of the following shows the correct order of boiling points for pentane, butane and propane?

- A. $\text{CH}_3\text{CH}_2\text{CH}_3 > \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3 > \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$
- B. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3 > \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3 > \text{CH}_3\text{CH}_2\text{CH}_3$
- C. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3 > \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3 > \text{CH}_3\text{CH}_2\text{CH}_3$
- D. $\text{CH}_3\text{CH}_2\text{CH}_3 > \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3 > \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$

[1 mark]

Question 6

Substance L has the following properties.

| Melting Point | Electrical conductivity | |
|---------------|-------------------------|-------------|
| 660 °C | When solid | When molten |
| | Yes | Yes |

What is likely to be the identity of substance L?

- A. Graphite
- B. Li_2O
- C. NaCl
- D. Al

[1 mark]

Question 7

Which of the following statements about ethylamine, $\text{CH}_3\text{CH}_2\text{NH}_2$, is correct?

- A. The strongest type of intermolecular force are London dispersion forces
- B. The nitrogen atom does not have a lone pair present
- C. The strongest type of intermolecular force is permanent dipole permanent dipole forces
- D. The strongest type of intermolecular force is hydrogen bonding

[1 mark]

Question 8

Which of the following statements about butane, $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$, and propanone, CH_3COCH_3 are correct?

- I. The boiling point of propanone is higher than butane
- II. The boiling point of butane is higher than propanone
- III. The strongest type of intermolecular force in propanone are permanent dipole permanent dipole forces

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

[1 mark]

Question 9

What is the correct order of decreasing melting points for group 1 metals?

- A. $\text{Na} > \text{K} > \text{Rb} > \text{Cs}$
- B. $\text{Na} > \text{K} > \text{Cs} > \text{Rb}$
- C. $\text{Cs} > \text{Rb} > \text{K} > \text{Na}$
- D. $\text{K} > \text{Na} > \text{Rb} > \text{Cs}$

[1 mark]

Question 10

Which of the following statements about alloys are correct?

- I. Alloys contain atoms of all the same sizes
- II. An alloy is a mixture of a metal with another element
- III. Alloys are harder than the pure metal they originate from

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

[1 mark]