

the molecular model [11 marks]

1. [Maximum mark: 1]

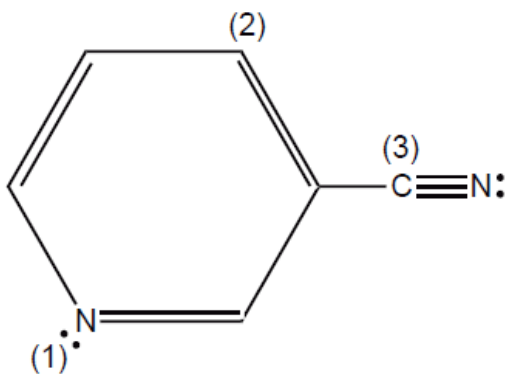
Which types of intermolecular force exist between CH_4 , CH_3OH and CH_3Cl molecules?

	CH_4	CH_3OH	CH_3Cl
A.	London dispersion only	London dispersion, H-bonding, dipole-dipole	London dispersion, dipole-dipole
B.	London dispersion, H-bonding	London dispersion, H-bonding, dipole-dipole	London dispersion, H-bonding, dipole-dipole
C.	London dispersion only	London dispersion, dipole-dipole	London dispersion only
D.	London dispersion, H-bonding	London dispersion only	London dispersion, dipole-dipole

[1]

2. [Maximum mark: 1]

What is the molecular geometry of the numbered atoms in the molecule shown below?



[1]

	N(1)	C(2)	C(3)
A.	Bent	Trigonal planar	Linear
B.	Trigonal planar	Bent	Bent
C.	Tetrahedral	Trigonal planar	Bent
D.	Bent	Tetrahedral	Linear

3. [Maximum mark: 1]

Which bond is the most polar?

A. C–H

B. N–H

C. O–H

D. F–H

[1]

4. [Maximum mark: 1]

What is the geometry around a carbon atom in graphene?

A. Hexagonal

B. Pyramidal

C. Tetrahedral

D. Trigonal planar

[1]

5. [Maximum mark: 1]

What is the correct number of bonding pairs of electrons in ethanedioic acid, $(\text{COOH})_2$?

A. 7

B. 8

C. 9

D. 18

[1]

6. [Maximum mark: 1]

Which two liquids are immiscible?

A. H_2O and $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$

B. H_2O and CH_3COOH

C. $\text{CH}_3\text{CH}_2\text{OH}$ and CH_3COOH

D. $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$ and $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3$

[1]

7. [Maximum mark: 1]

What happens as ice melts at 0°C ?

I. Molecules gain kinetic energy and temperature increases.

II. Added energy overcomes hydrogen bonds between molecules.

III. Molecules gain sufficient energy to move from fixed positions.

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

[1]

8. [Maximum mark: 1]

Which combination best describes NO_2^- ?

	Number of electron domains around N	Molecular geometry	Bond angle
A.	2	linear	180°
B.	3	bent	105°
C.	3	bent	117°
D.	4	trigonal planar	120°

[1]

9. [Maximum mark: 1]

What is the molecular geometry of BrF_5 ?

A. trigonal bipyramidal

B. octahedral

C. square-based pyramidal

D. T-shaped

[1]

10. [Maximum mark: 1]

Which molecule is non-polar?

A. XeF_2

B. IF_5

C. SF_2

D. PF_3

[1]

11. [Maximum mark: 1]

Which is the correct structure of SO_3 , based on the lowest formal charge?

