

1.1 Matter, Chemical Change & the Mole Concept

Question Paper

Course	DPIB Chemistry
Section	1. Stoichiometric Relationships
Topic	1.1 Matter, Chemical Change & the Mole Concept
Difficulty	Hard

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

Question 1

The correct combination relating to state change, particles and energy is:

A	Subliming	particles move further apart	particles gain energy
B	Vaporizing	particles come closer together	particles gain energy
C	Melting	particles move further apart	particles lose energy
D	Condensing	particles come closer together	particles gain energy

[1 mark]

Question 2

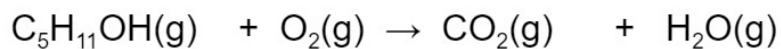
Which of the following mixtures is **NOT** classified as homogeneous?

- A** Salt solution
- B** Brass
- C** Orange juice that has been filtered
- D** Concrete

[1 mark]

Question 3

What is the whole number coefficient for oxygen when the equation for the combustion of pentanol is balanced?



- A** 7
- B** 8
- C** 15
- D** 16

[1 mark]

Question 4

The order in which oxygen, methane, nitrogen and argon will diffuse from slowest to fastest, at the same conditions of temperature and pressure is:

- A** $\text{O}_2 < \text{N}_2 < \text{Ar} < \text{CH}_4$
- B** $\text{CH}_4 < \text{Ar} < \text{N}_2 < \text{O}_2$
- C** $\text{N}_2 < \text{O}_2 < \text{Ar} < \text{CH}_4$
- D** $\text{Ar} < \text{O}_2 < \text{N}_2 < \text{CH}_4$

[1 mark]

Question 5

What is the total number of protons and electrons in two moles of hydrogen gas?

- A** 4
- B** 8
- C** 2.4×10^{24}
- D** 4.8×10^{24}

[1 mark]

Question 6

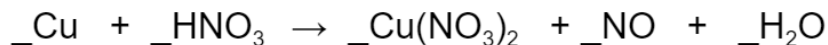
Which sample contains the largest amount, in mol, of atoms?

- A** 0.30 mol of P_2O_5
- B** 0.40 mol of $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
- C** 0.50 mol of CH_3COOH
- D** 0.90 mol of H_2O

[1 mark]

Question 7

The coefficient for copper when the following equation is balanced is:



- A** 1
- B** 2
- C** 3
- D** 4

[1 mark]

Question 8

Chlorofluorocarbons have been used extensively as liquid coolants in refrigerators and air conditioners. Which of the following descriptions explains how a refrigerant works?

- A** At high pressure the liquid evaporates and absorbs heat, cooling the surroundings
- B** At low pressure the liquid evaporates and absorbs heat, cooling the surroundings
- C** At high pressure the liquid condenses and absorbs heat, cooling the surroundings
- D** At low pressure the liquid condenses and absorbs heat, cooling the surrounding

[1 mark]

Question 9

Excess dilute hydrochloric acid is added separately to equal masses of the four metals, calcium, zinc, magnesium and strontium. Which metal will give off the largest volume of hydrogen gas in the reaction?

- A** calcium
- B** zinc
- C** magnesium
- D** strontium

[1 mark]

Question 10

How many ions are present in 0.02 mol of $(\text{NH}_4)_3\text{PO}_4$?

- A** 8.0×10^{-2}
- B** 1.2×10^{22}
- C** 4.8×10^{22}
- D** 2.4×10^{23}

[1 mark]