the mole [7 marks]

1. [Maximum mark: 1]
How many moles of phosphate ions, PO_4^{3-}, are there in 103.39 g of $Ca_3(PO_4)_2$?
$M_r = 310.18$

A. 0.11

B. 0.33

C. 0.67

D. 2.00 [1]

2. [Maximum mark: 1]
Which compound has the highest percentage of carbon by mass?

A. CH_4

B. C_2H_6

C. CO

D. CO_2 [1]

3. [Maximum mark: 1]
What is correct for the empirical formula of a compound?

A. The number of atoms of each element in a molecule of the compound

B. The total number of atoms in a molecule of the compound

C. The simplest ratio of atoms of each element in a molecule of the compound

D. The total number of elements in a molecule of the compound [1]

4. [Maximum mark: 1]
What is the number of hydrogen atoms in 2.00 mol of NH_3?

Avogadro's constant (L or N_A) = $6.02 \times 10^{23}\ mol^{-1}$

A. 1.20×10^{24}

B. 1.81×10^{24}

C. 2.41×10^{24}

D. 3.61×10^{24} [1]

5. [Maximum mark: 1]
Which information does the molecular formula provide?

A. The simplest ratio of atoms in a molecule

B. The actual numbers of atoms in a molecule

C. The number of molecules in one mole

D. The types of bonds in a molecule [1]

6. [Maximum mark: 1]

How many oxygen atoms are present in 0.0500 mol $Ba(OH)_2 \cdot 8H_2O$?

$N_A = 6.02 \times 10^{23}$

A. 3.01×10^{23}

B. 6.02×10^{23}

C. 3.01×10^{24}

D. 6.02×10^{24} [1]

7. [Maximum mark: 1]

Which is a possible empirical formula for a substance with $M_r = 42$?

A. CH

B. CH_2

C. C_3H_6

D. C_3H_8 [1]