



**CHEMISTRY
STANDARD LEVEL
PAPER 1**

Thursday 11 November 2010 (afternoon)

45 minutes

INSTRUCTIONS TO CANDIDATES

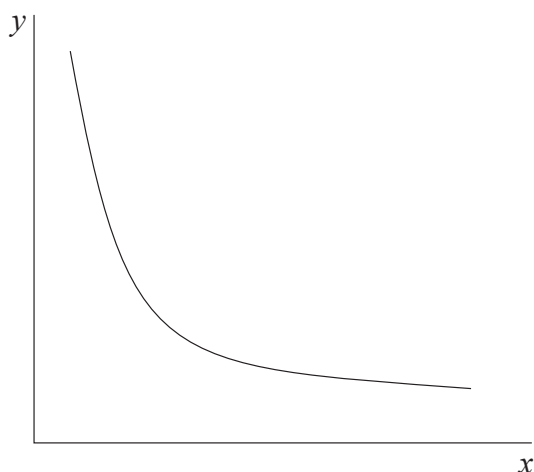
- Do not open this examination paper until instructed to do so.
- Answer all the questions.
- For each question, choose the answer you consider to be the best and indicate your choice on the answer sheet provided.
- The periodic table is provided for reference on page 2 of this examination paper.

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58	59	60	61	62	63	64	65	66	67	68	69	70	71
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
140.12	140.91	144.24	146.92	150.35	151.96	157.25	158.92	162.50	164.93	167.26	168.93	173.04	174.97
90	91	92	93	94	95	96	97	98	99	100	101	102	103
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
232.04	231.04	238.03	(237)	(242)	(243)	(247)	(247)	(251)	(254)	(257)	(258)	(259)	(260)

1. What is the total number of nitrogen atoms in **two** mol of NH_4NO_3 ?
- A. 4
- B. 6.02×10^{23}
- C. 1.20×10^{24}
- D. 2.41×10^{24}
2. On analysis, a compound with molar mass 60 g mol^{-1} was found to contain 12 g of carbon, 2 g of hydrogen and 16 g of oxygen. What is the molecular formula of the compound?
- A. CH_2O
- B. CH_4O
- C. $\text{C}_2\text{H}_4\text{O}$
- D. $\text{C}_2\text{H}_4\text{O}_2$
3. Equal masses of the metals Na, Mg, Ca and Ag are added to separate samples of excess HCl(aq) . Which metal produces the greatest total volume of $\text{H}_2(\text{g})$?
- A. Na
- B. Mg
- C. Ca
- D. Ag

4. The graph below represents the relationship between two variables in a fixed amount of gas.



Which variables could be represented by each axis?

	x-axis	y-axis
A.	pressure	temperature
B.	volume	temperature
C.	pressure	volume
D.	temperature	volume

5. 8.5 g of NH_3 are dissolved in H_2O to prepare a 500 cm^3 solution. Which statements are correct?

- I. NH_3 is the solute and H_2O is the solution
 - II. The concentration of the solution is 17 g dm^{-3}
 - III. $[\text{NH}_3] = 1.0 \text{ mol dm}^{-3}$
- A. I and II only
 - B. I and III only
 - C. II and III only
 - D. I, II and III

6. Which statement about the species $^{63}\text{Cu}^{2+}$ and $^{65}\text{Cu}^{+}$ is correct?
- A. Both species have the same number of protons.
 - B. Both species have the same number of electrons.
 - C. Both species have the same number of neutrons.
 - D. Both species have the same electron arrangement.
7. Which statement about the isotopes of an element is correct?
- A. They have the same mass number.
 - B. They have a different atomic number.
 - C. They have the same chemical properties.
 - D. They are located in different places in the periodic table.
8. Which properties of the alkali metals decrease going down group 1?
- A. First ionization energy and reactivity
 - B. Melting point and atomic radius
 - C. Reactivity and electronegativity
 - D. First ionization energy and melting point

9. Which statements about the periodic table are correct?

- I. The elements Mg, Ca and Sr have similar chemical properties.
- II. Elements in the same period have the same number of main energy levels.
- III. The oxides of Na, Mg and P are basic.

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

10. The electronegativities of four different elements are given below (the letters are not their chemical symbols).

Element	W	X	Y	Z
Electronegativity	0.9	1.2	3.4	4.0

Based on this information which statement is correct?

- A. W is a non-metal.
- B. W and X form an ionic compound.
- C. Y is a metal.
- D. Y and Z form a covalent compound.