

PART A: MULTIPLE CHOICE (10 MARKS)

Choose the best response in each case and place your answer in the appropriate space on your answer sheet.

- A bright yellow solid substance is known to be an element. It is brittle and will shatter if hit with a hammer. It is a poor conductor of both heat and electricity. This element is best called a:
 - metal
 - nonmetal
 - halogen
 - noble gas
- When atoms form chemical bonds they can:
 - lose electrons only.
 - gain electrons only.
 - share electrons only.
 - lose, gain, or share electrons.

Use the hypothetical periodic table below to answer questions 2 & 3.

(a)	(b)	(c)	(d)		
F			G		
H	I	J	K	L	M
N	O	P	C	R	S

- The most reactive group of metals consists of the elements in which column?
- The most reactive group of nonmetals consists of the elements in which column?
- An atom becomes an ion with a charge of 2- when it:
 - gains 2 electrons
 - loses 2 neutrons
 - gains 2 protons
 - loses 2 electrons
- Which of the following ions has the same number of electrons as the noble gas neon (Ne)?
 - F^{1-}
 - K^{1+}
 - S^{2-}
 - Ca^{2+}
- In a chemical reaction, a non-metallic element usually:
 - loses electrons
 - gains electrons
 - loses protons
 - gains protons
- Atoms of element A have 2 electrons in their outermost shell. Atoms of element B have 7 electrons in their outermost shell. The formula of the compound formed between A and B is:
 - AB_3
 - A_7B_2
 - A_2B
 - AB_2
- Which of the following is a molecular compound held together by ionic bonds?
 - NH_3
 - CO_2
 - $NaCl$
 - SO

PART B: MATCH (5 MARKS)

Match the definition from the 1st column to the best term in the 2nd column and place the matching letter in the appropriate space on your answer sheet.

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|---|-----------------------|
| 1. A compound formed by the transfer of electrons. | A) combining capacity |
| 2. The bond formed as a result of the sharing of electrons in a compound. | B) covalent bond |
| 3. A group of atoms that tend to stay together and carry an overall ionic charge. | C) hydrocarbons |
| 4. Artificially made materials manufactured in the chemical industry. | D) ion |
| 5. Long, thin molecules formed when smaller molecules link together. | E) ionic compound |
| | F) molecular compound |
| | G) natural products |
| | H) polyatomic ion |
| | I) polymer |
| | J) synthetic products |

PART A: MULTIPLE CHOICE (10 MARKS)

1	2	3	4	5	6	7	8	9	10
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PART B: MATCH (5 MARKS)

1	2	3	4	5
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PART C: SHORT ANSWER (40 MARKS)

Answer the following questions in the space provided. If more space is needed, use the back of this sheet.

- {8} 1. (a) What is the symbol of the noble gas that has the closest atomic # to the element: (i) oxygen? _____ (ii) potassium? _____
 (b) How many e's must the element lose or gain to have an electron arrangement like its' closest noble gas? (i) _____ (ii) _____
 (c) What charge (# and sign) of ion will result? (i) _____ (ii) _____

2. Beryllium and fluorine react to form an ionic compound.

3. Phosphorus and hydrogen react to form a molecular compound

{2} (a) Indicate the ionic charges on the ions.

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Be

F

P

H

{2} (b) What is the ① chemical formula and ② name of the compound formed.

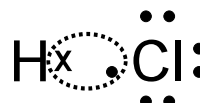
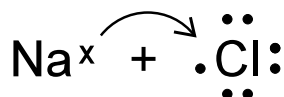
{2} (b) What is the ① chemical formula and ② name of the compound formed.

① _____ ② _____

① _____ ② _____

{2} (c) Sketch Lewis dot diagrams to show how the ionic compound from (b) above forms by transferring electrons. More than one atom of each element may be necessary. (See the example for sodium chloride below!)

{2} (c) Sketch Lewis dot diagrams to show how the molecular compound from (b) above forms by sharing electrons. More than one atom of each element may be necessary. (See the example for hydrochloric acid below!)



{20}4. Give the compound name or formula as required.

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|---------------------------------|-------|-------------------------|-------|
| (a) AlBr_3 | _____ | (k) calcium nitride | _____ |
| (b) ZnF_2 | _____ | (l) potassium phosphide | _____ |
| (c) SnF_4 | _____ | (m) tin(II) phosphide | _____ |
| (d) Cu_2S | _____ | (n) lead(IV) oxide | _____ |
| (e) $\text{Pb}(\text{ClO}_3)_2$ | _____ | (o) magnesium carbonate | _____ |
| (f) K_3PO_4 | _____ | (p) iron(II) hydroxide | _____ |
| (g) $\text{Sn}(\text{NO}_3)_2$ | _____ | (q) calcium phosphate | _____ |
| (h) $\text{Al}(\text{HCO}_3)_3$ | _____ | (r) potassium sulfate | _____ |
| (i) CF_4 | _____ | (s) nitrogen phosphide | _____ |
| (j) CS_2 | _____ | (t) dichlorine monoxide | _____ |