

PART A: MULTIPLE CHOICE (10 MARKS)

|   |   |   |   |   |   |   |   |   |    |
|---|---|---|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| d | a | c | b | a | d | c | b | d | a  |

PART B: MATCH (5 MARKS)

|   |   |   |   |   |
|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 |
| D | B | F | J | H |

PART C: SHORT ANSWER (60 MARKS)

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

{4} 1. Describe the chemical tests (and the results) that can be used to identify the following (see example).

| GAS          | TEST                       | RESULTS                   |
|--------------|----------------------------|---------------------------|
| water vapour | cobalt chloride test paper | changes from blue to pink |
| oxygen gas   | glowing splint ✓           | reignites ✓               |
| hydrogen gas | burning splint ✓           | "pop" & flame goes out ✓  |

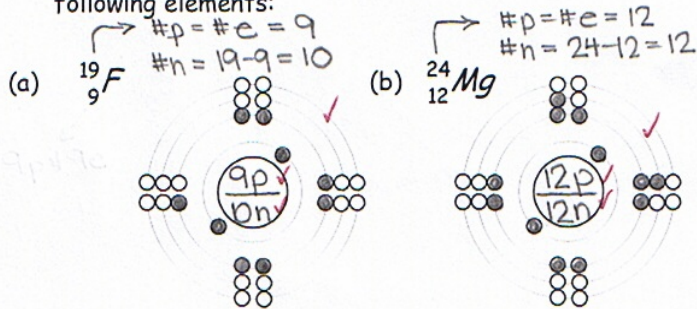
{9} 2. Complete the following chart that compares the subatomic particles.

|            | Relative Mass | Charge | Location         |
|------------|---------------|--------|------------------|
| Proton     | 1 ✓           | +1 ✓   | nucleus ✓        |
| electron ✓ | 0             | -1 ✓   | orbits nucleus ✓ |
| neutron ✓  | 1 ✓           | 0      | nucleus ✓        |

{6} 3. Indicate the element and the # of atoms of that element present in the following molecule.

| <chem>Na2CO3</chem> | #   |
|---------------------|-----|
| Na - sodium ✓       | 2 ✓ |
| C - carbon ✓        | 1 ✓ |
| O - oxygen ✓        | 3 ✓ |

{6} 4. Use the diagrams below to draw B-R diagrams for the following elements:



{15} 5. Complete the chart below using the information given.

| Element | Symbol | Atomic # | Mass # | # p's | # e's | # n's |
|---------|--------|----------|--------|-------|-------|-------|
| argon   | Ar ✓   | 18 ✓     | 40 ✓   | 18 ✓  | 18 ✓  | 22 ✓  |
| sodium  | Na ✓   | 11 ✓     | 23 ✓   | 11 ✓  | 11 ✓  | 12 ✓  |
| oxygen  | O ✓    | 8 ✓      | 16 ✓   | 8 ✓   | 8 ✓   | 8 ✓   |
| ??????? | X      | 50 ✓     | 60 ✓   | 50 ✓  | 50 ✓  | 10 ✓  |

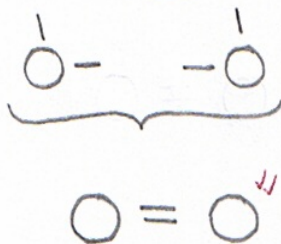
{6} 6. Express the first 3 atoms from question #5 in standard atomic notation. ( $^A_Z\text{X}$  format)

| argon                   | sodium                  | oxygen              |
|-------------------------|-------------------------|---------------------|
| $^{40}_{18}\text{Ar}$ ✓ | $^{23}_{11}\text{Na}$ ✓ | $^{16}_8\text{O}$ ✓ |

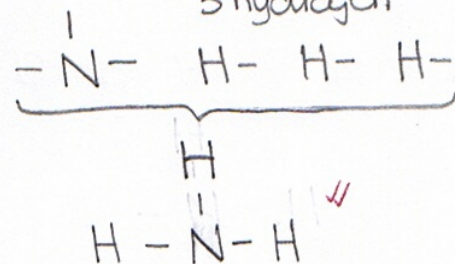
(4) 7. Use the following info to help draw structural diagrams for:

| ATOM     | # OF CONNECTIONS |
|----------|------------------|
| hydrogen | 1                |
| oxygen   | 2                |
| nitrogen | 3                |
| carbon   | 4                |

(a)  $O_2 \rightarrow 2 \text{ oxygen}$  (2 connections)



(b)  $NH_3 \rightarrow 1 \text{ nitrogen \& 3 hydrogen}$  (3 connections)



8. For each compound below use the info given in the tables to write the:

- (2) ① name,
- (4) ② formula and
- (4) ③ structural diagram

| Metals   |        |                    |
|----------|--------|--------------------|
| Element  | Symbol | Combining capacity |
| aluminum | Al     | 3                  |
| sodium   | Na     | 1                  |

| Nonmetals |        |                    |               |
|-----------|--------|--------------------|---------------|
| Element   | Symbol | Combining capacity | Combined name |
| fluorine  | F      | 1                  | fluoride      |
| oxygen    | O      | 2                  | oxide         |

Hint: use the info in the tables above to help answer this question!

|                    | (a) sodium & fluorine                           | (b) aluminum & oxygen   |
|--------------------|---|---|
| name               | sodium fluoride ✓                               | aluminum oxide ✓  |
| formula            | <del>Na<sub>1</sub>F<sub>1</sub></del> } NaF ✓✓ | <del>Al<sub>3</sub>O<sub>2</sub></del> } Al <sub>2</sub> O <sub>3</sub> ✓✓  |
| structural diagram | Na - F ✓✓                                       | $\text{Al} = \text{O}$<br>$ $<br>$\text{O} - \text{Al}$<br>$ $<br>$\text{O}$<br>✓✓<br>or<br>$\text{Al} - \text{O} - \text{Al}$<br>$ $<br>$\text{O}$ |