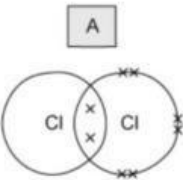
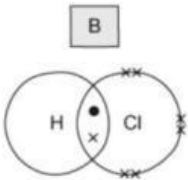
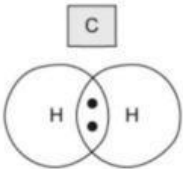
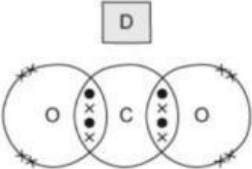
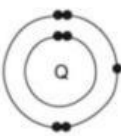


Name: \_\_\_\_\_

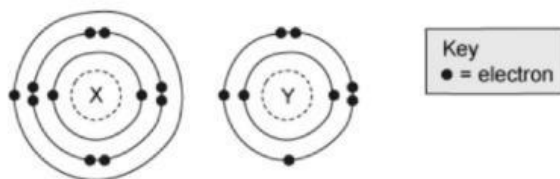
Class: \_\_\_\_\_

| No | Questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Answer |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1  | <p>Which of the following compounds are formed by covalent bonding?</p> <p>1 Potassium fluoride</p> <p>2 Propane</p> <p>3 Carbon dioxide</p> <p>4 Lithium bromide</p> <p>A. 2 and 3</p> <p>B. 2 and 4</p> <p>C. 1, 2 and 3</p> <p>D. 1 and 4</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |        |
| 2  | <p>Dot and cross diagrams for four covalent molecules are shown below.</p> <p>Which diagram is incorrect?</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>A</p>  </div> <div style="text-align: center;"> <p>B</p>  </div> <div style="text-align: center;"> <p>C</p>  </div> <div style="text-align: center;"> <p>D</p>  </div> </div> |        |
| 3  | <p>Atoms P and Q have electronic structures as shown in the diagram. They react together to form a covalent compound.</p> <div style="display: flex; justify-content: center; align-items: center; gap: 50px;">   </div> <p>What is the formula of the compound?</p> <p>A. P<sub>2</sub>Q<sub>3</sub></p> <p>B. P<sub>3</sub>Q</p> <p>C. P<sub>3</sub>Q<sub>2</sub></p> <p>D. PQ<sub>4</sub></p>                                                                                                                                                                                      |        |

|   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |               |                      |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|----------------------|---------------|----------------------|---|-------|----------|--------|---|-------|----------|-------------|---|-------|--------|-------------|---|-------|--------|--------|--|
| 4 | <p>Which statement about bonding is not correct?</p> <p>A. Covalent bonding involves non metal elements.</p> <p>B. Covalent bonding involves electron sharing.</p> <p>C. Covalent bonding involves electron transfer.</p> <p>D. Covalent bonding does not involve metal elements.</p>                                                                                                                                                                                                                                                                                                 |               |                      |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| 5 | <p>What change occurs to an atom when it forms a negative ion?</p> <p>A. It loses electrons.</p> <p>B. It gains protons.</p> <p>C. It gains electrons.</p> <p>D. It loses protons.</p>                                                                                                                                                                                                                                                                                                                                                                                                |               |                      |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| 6 | <p>Lithium and chlorine react together to form lithium chloride. During formation, each lithium atom.....1..... one .....2..... which is completely .....3..... to the chlorine atom.</p> <p>What words correctly fill gaps 1, 2 and 3?</p> <table><tr><td></td><td>1</td><td>2</td><td>3</td></tr><tr><td>A</td><td>gains</td><td>electron</td><td>shared</td></tr><tr><td>B</td><td>loses</td><td>electron</td><td>transferred</td></tr><tr><td>C</td><td>gains</td><td>proton</td><td>transferred</td></tr><tr><td>D</td><td>loses</td><td>proton</td><td>shared</td></tr></table> |               | 1                    | 2             | 3                    | A | gains | electron | shared | B | loses | electron | transferred | C | gains | proton | transferred | D | loses | proton | shared |  |
|   | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2             | 3                    |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| A | gains                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | electron      | shared               |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| B | loses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | electron      | transferred          |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| C | gains                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | proton        | transferred          |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| D | loses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | proton        | shared               |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| 7 | <p>Which of the statements describes ionic bonding?</p> <p>A. Electrostatic attraction between atoms</p> <p>B. Electrostatic attraction between positively charged particles and delocalised electrons</p> <p>C. Electrostatic attraction between oppositely charged ions</p> <p>D. Electrostatic attraction between the nuclei of two atoms and a shared pair of electrons</p>                                                                                                                                                                                                       |               |                      |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| 8 | <p>Which row provides a correct description of the properties of metals?</p> <table><tr><td></td><td>melting point</td><td>boiling point</td><td>conducts electricity</td></tr><tr><td>A</td><td>high</td><td>low</td><td></td></tr><tr><td>B</td><td>low</td><td>high</td><td>✓</td></tr><tr><td>C</td><td>low</td><td>low</td><td></td></tr><tr><td>D</td><td>high</td><td>high</td><td>✓</td></tr></table>                                                                                                                                                                         |               | melting point        | boiling point | conducts electricity | A | high  | low      |        | B | low   | high     | ✓           | C | low   | low    |             | D | high  | high   | ✓      |  |
|   | melting point                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | boiling point | conducts electricity |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| A | high                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | low           |                      |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| B | low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | high          | ✓                    |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| C | low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | low           |                      |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |
| D | high                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | high          | ✓                    |               |                      |   |       |          |        |   |       |          |             |   |       |        |             |   |       |        |        |  |

| 9  | <p>Which of the following dot-and-cross diagrams shows the correct arrangement of electrons in lithium sulfide?</p> <p>A </p> <p>B </p> <p>C </p> <p>D </p>                                                                                                                                                                                                                                                                                                                                                                                                                                |       |           |                         |  |  |       |          |          |   |          |  |   |  |   |                    |   |  |  |   |           |  |   |  |   |                |   |  |  |  |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----------|-------------------------|--|--|-------|----------|----------|---|----------|--|---|--|---|--------------------|---|--|--|---|-----------|--|---|--|---|----------------|---|--|--|--|
| 10 | <p>Which statement correctly describes the bonding in metals?</p> <p>A. A lattice of negative ions in a "sea of electrons".</p> <p>B. A lattice of positive ions in a "sea of electrons".</p> <p>C. A lattice of neutral atoms with delocalised electrons.</p> <p>D. A lattice of negative ions with delocalised electrons.</p>                                                                                                                                                                                                                                                            |       |           |                         |  |  |       |          |          |   |          |  |   |  |   |                    |   |  |  |   |           |  |   |  |   |                |   |  |  |  |
| 11 | <p>The table below shows four different substances.</p> <p>Which substance does the type of bonding shown not match?</p> <table><tr><th rowspan="2"></th><th rowspan="2">Substance</th><th colspan="3">Type of bonding present</th></tr><tr><th>Ionic</th><th>Covalent</th><th>Metallic</th></tr><tr><td>A</td><td>Fluorine</td><td></td><td>✓</td><td></td></tr><tr><td>B</td><td>Potassium chloride</td><td>✓</td><td></td><td></td></tr><tr><td>C</td><td>Beryllium</td><td></td><td>✓</td><td></td></tr><tr><td>D</td><td>Sodium bromide</td><td>✓</td><td></td><td></td></tr></table> |       | Substance | Type of bonding present |  |  | Ionic | Covalent | Metallic | A | Fluorine |  | ✓ |  | B | Potassium chloride | ✓ |  |  | C | Beryllium |  | ✓ |  | D | Sodium bromide | ✓ |  |  |  |
|    | Substance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |           | Type of bonding present |  |  |       |          |          |   |          |  |   |  |   |                    |   |  |  |   |           |  |   |  |   |                |   |  |  |  |
|    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Ionic | Covalent  | Metallic                |  |  |       |          |          |   |          |  |   |  |   |                    |   |  |  |   |           |  |   |  |   |                |   |  |  |  |
| A  | Fluorine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       | ✓         |                         |  |  |       |          |          |   |          |  |   |  |   |                    |   |  |  |   |           |  |   |  |   |                |   |  |  |  |
| B  | Potassium chloride                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ✓     |           |                         |  |  |       |          |          |   |          |  |   |  |   |                    |   |  |  |   |           |  |   |  |   |                |   |  |  |  |
| C  | Beryllium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       | ✓         |                         |  |  |       |          |          |   |          |  |   |  |   |                    |   |  |  |   |           |  |   |  |   |                |   |  |  |  |
| D  | Sodium bromide                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ✓     |           |                         |  |  |       |          |          |   |          |  |   |  |   |                    |   |  |  |   |           |  |   |  |   |                |   |  |  |  |

- 12 The electronic structures of atoms X and Y are shown.

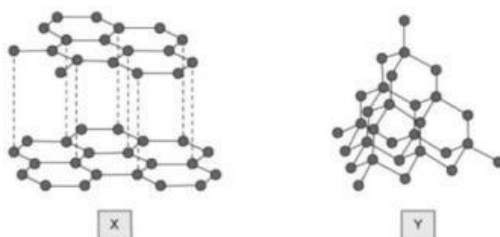


X and Y combine by ionic bonding.

What is the formula of the compound produced?

- A.  $X_2Y$
- B.  $X_2Y_2$
- C.  $X_2Y_4$
- D.  $XY$

- 13 The structures of two solids X and Y are shown below.



What are the correct uses of these structures?

|   | X                      | Y                      |
|---|------------------------|------------------------|
| A | industrial lubricating | glass cutters          |
| B | industrial lubricating | industrial lubricating |
| C | glass cutters          | industrial lubricating |
| D | glass cutters          | glass cutters          |

- 14 Statements 1, 2 and 3 are about diamond and graphite.

- 1 They have atoms that form three equally strong bonds
- 2 They are both formed from the same element
- 3 They each conduct electricity

Which statement(s) is / are correct?

- A. 1 only
- B. 2 only
- C. 1 and 3
- D. 1 and 2