



PEAK SUCCESS EDUCATION
Kenya Certificate of Secondary Education

NAME:

SCHOOL:.....

DATE:

STRUCTURE AND BONDING

INSTRUCTIONS TO CANDIDATES

Answer ALL questions in this paper in the spaces provided.

1. Using dots (●) and crosses (×) to represent the outermost electrons, draw the structure to show the bonding in CO₂. (C=6, O = 8).

(2mks)

2. Study the table below and answer the questions that follow.

| Substance | A | B | C | D | E | F |
|----------------------|------|------------|------|------|------|------|
| M.P (°C) | 801 | 113 119 | -39 | -5 | -101 | 1356 |
| B.P (°C) | 1410 | 445 | 457 | 54 | -36 | 2860 |
| Electrical (Liquid) | Good | Poor | Good | Poor | Poor | Poor |
| Conductivity (Solid) | Poor | Poor | Good | Poor | Poor | Poor |

a) Identify, with a reason, the substance that

(i) has a metallic structure. (1mk)

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(ii) Can be diamond (1mk)

.....

b) Suggest a reason why substance B has two melting points. (1mk)

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3. The table below gives some properties of compounds P, Q, R and S

| Compound | M.p ($^{\circ}\text{C}$) | b.p ($^{\circ}\text{C}$) | Conductivity in water |
|----------|----------------------------|----------------------------|-----------------------|
| P | -23 | 77 | Does not conduct |
| Q | -19 | 74 | Does not conduct |
| R | -85 | -61 | Conducts |
| S | 714 | 1407 | Conducts |

(a) Which one of the compounds in the table is ionic? Explain. (1mk)

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(b) Which one of the compound (s) in the table is/are liquid(s) at room temperature?
Give reasons. (2mks)

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(c) Which of the compound(s) is / are gas(s) at room temperature? Explain. (1mk)

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4. Given that element **A**, **B** and **C** have atomic numbers 14, 11 and 17 respectively, draw and name the bonding in the compounds formed using dots (.) and (X), when the following elements react.

(d) **B** and **C**

(1 ½ mks)

(e) **A** and **C**

(1 ½ mks)