233/1 — **CHEMISTRY** — **Paper 1**

(THEORY)

Nov. 2019 – 2 hours

Name .... Index Number ....

Candidate's Signature .... Date ....

Instructions to candidates

(a) Write your name and index number in the spaces provided above.

(b) Sign and write the date of examination in the spaces provided above.

(c) Answer **all** the questions in the spaces provided in the question paper.

(d) KNEC mathematical tables and silent non-programmable electronic calculators may be used.

(e) All working **must** be clearly shown where necessary.

(f) **This paper consists of 16 printed pages.**

(g) **Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.**

(h) **Candidates should answer the questions in English.**

For Examiner's Use Only

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

17	18	19	20	21	22	23	24	25	26	27	28	29	Grand Total	

919234

1.   An atom of element **A** has mass number **39** and **19** protons.

    (a)   Write the electron arrangement of the atom.   (1 mark

    ....

    (b)   State the period and group to which element **A** belongs.

        Group .... (½ mark

        Period .... (½ mark

    (c)   State whether the element is a metal or a non-metal.   (1 mark)

    ....

2.   Describe how an increase in concentration increases the rate of a reaction.   (2 marks)

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3.   The flow chart in **Figure 1** represents some stages in the extraction of copper metal. Study it and answer the questions that follow.

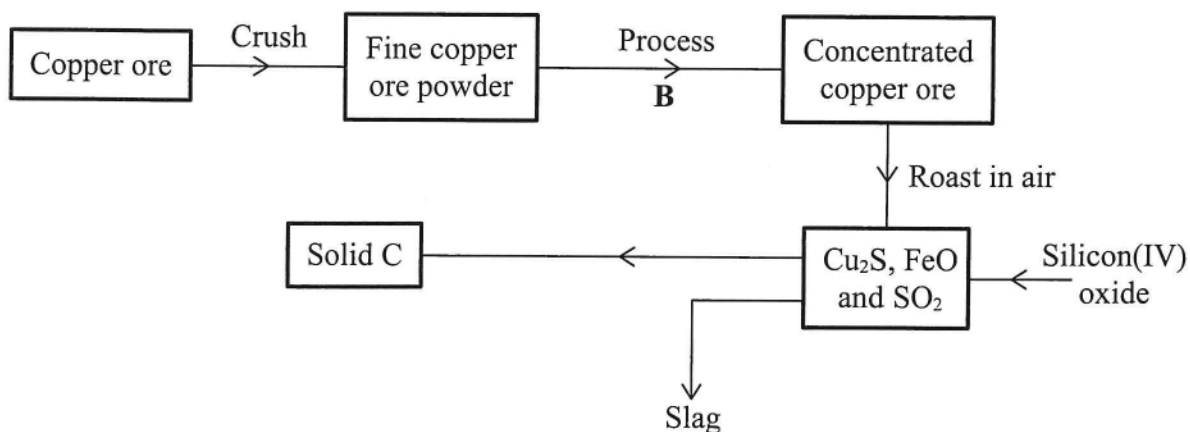**Figure 1**

7.   (a)   Identify:

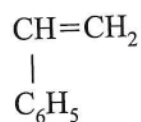   (i)   the copper ore .... (1 mark)

        (ii)   process B .... (½ mark)

        (iii)   solid C .... (½ mark)

    (b)   Write an equation for the reaction that forms the slag.   (1 mark)

        ....

        ....

4.   A monomer has the following structure.

$$CH=CH_2$$
$$|$$
$$C_6H_5$$

    (a)   Draw the structure of its polymer that contains three monomers.   (1 mark)

        ....

        ....

        ....

    (b)   A sample of the polymer formed from the monomer has a molecular mass of 4992. Determine the number of monomers that formed the polymer $(C=12; H=1.0)$.   (2 marks)

        ....

        ....

        ....

        ....

28. Draw in the space provided a labelled diagram of the set-up of the apparatus that can be used t
electrolyse molten lead(II) bromide.
(3 marks

29. Name an appropriate apparatus that is used to prepare standard solutions in the laboratory.
(1 mark)

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