**MARKING SCHEME**

**CHEMISTRY PRACTICAL**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **I** | **II** | **III** |
| ***Final burette reading (cm3)*** |  |  |  |
| ***Initial burette reading (cm3)*** |  |  |  |
| ***Volume of solution T used (cm3)*** |  |  |  |

1. Complete table ……………………………………………………………….(1mk)

Complete table with 3 titrations done – 1mk

In Complete table with 2 titrations done - 1mk

incomplete table with 1 titration done – 0mks

Penalize ½ mk once for

* Inverted table
* Wrong anthmetic
* Unrealistic titre values ( below 1 or above 50 unless explained)

1. Use of decimals………………………………………………………………..1mk

* Accept 1 or 2 d.p uses consistently otherwise penalize fully
* If 2 d.p used the 2nd d.p should be either 0 or 5 otherwise penalize fully

c) Accuracy ……………………………………………………………………….1mk

Compare the candidates titre values with the S.V

* If any value is within +- 0.1 award 1mk
* If within + -0.2 award ½ mk
* If beyond +- 0.2 award zero mark

1. Principles of averaging ……………………………………………………….1mk

1f 3 consistent titrations done and averaged 1mk

If 3 titrations done but only 2 are consistent and averaged (1mk)

If only two titrations done, are consistent and averaged (1mk)

If 3 titrations done and are consistent but only 2 are averaged ( 0mk)

If 3 inconsistent titres averaged ( 0mk)

1f 2 inconsistent titres averaged (0mk)

1. Final answer accuracy……………………………………………………………..1mk

Compare the candidates correct average titre with S.V

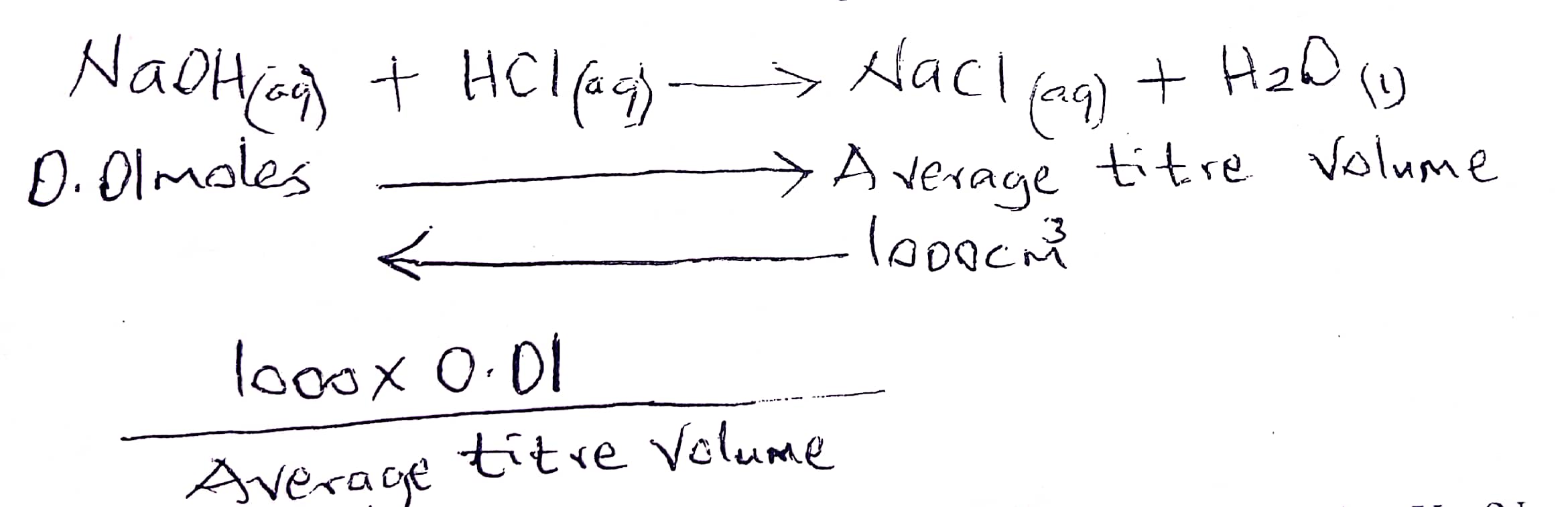
* If within +- 0.1 of S.V (1mk)
* If within +- 0.2 of S.V ( ½ mk)
* If beyond +- 0.2 of S.V ( 0mk)

a) Calculate the:

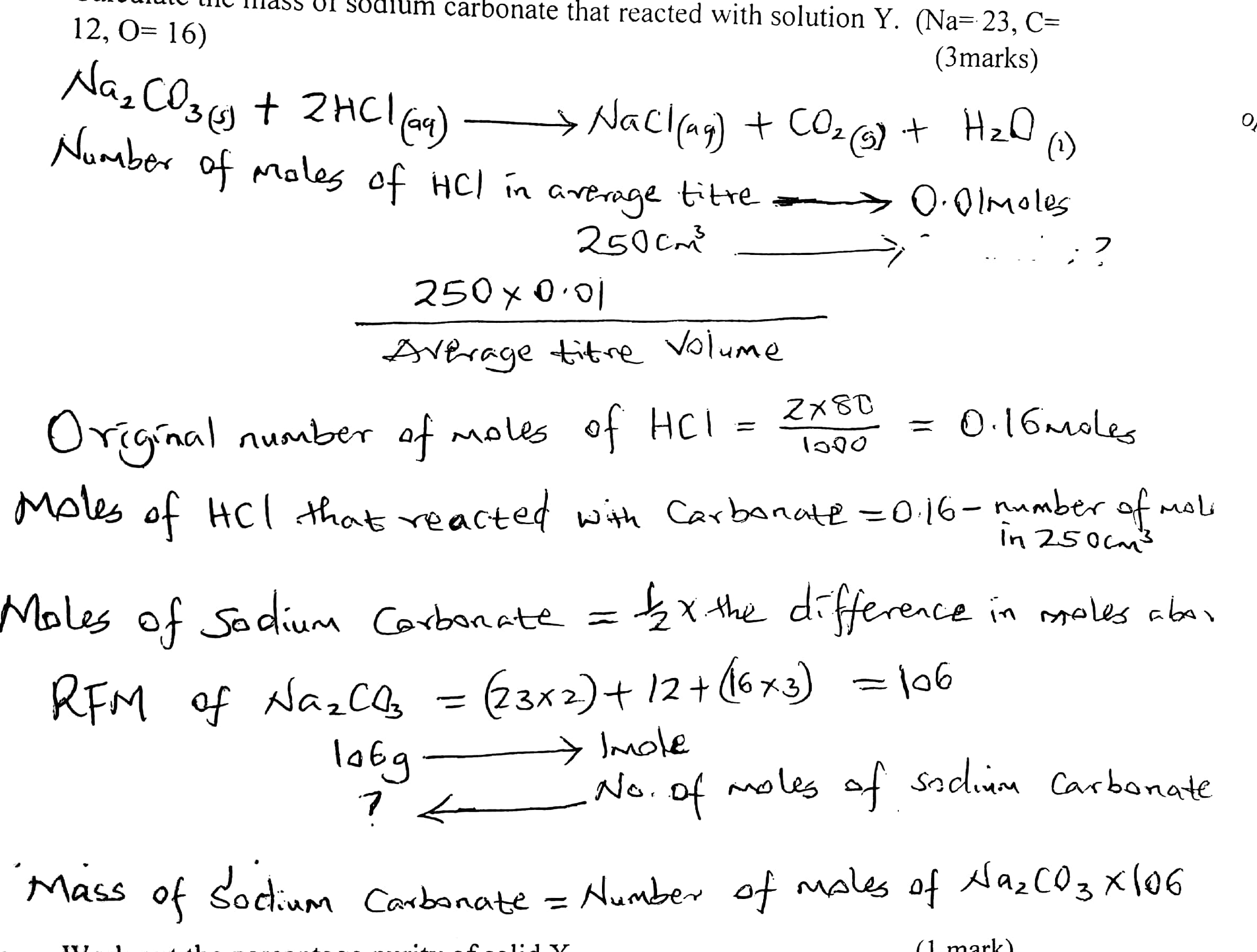
1. Average volume of solution T used (1 mark)

***Captured in principal of averaging***

1. The number of moles of solution Z used in titration (1 mark)
2. Concentration of solution T in moles per liter. (2 marks)



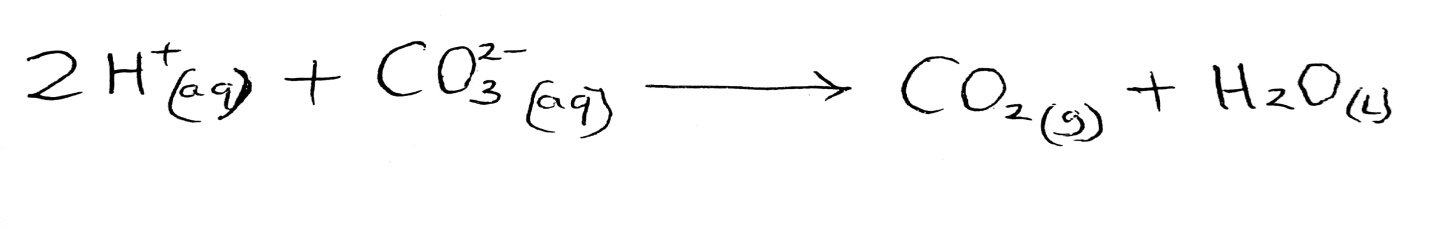
1. Calculate the mass of sodium carbonate that reacted with solution Y. (Na= 23, C= 12, O= 16) (3marks)



1. Work out the percentage purity of solid X. (1 mark)

x 100

b) Write the ionic equation between solid X and solution Y. (1 mark



3. **You are provided with solid L. Carry out the test below and record your observations and inferences in the spaces provided.**

a) Describe solid. (2 marks)

b) Place half spatula of L in a non-luminous flame of a Bunsen burner.

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| --- | --- |
| Observations | Inference |
| **Solid melts and burns with a yellow sooty flame**  (1/2 mark) | C:\Users\Owner\AppData\Local\Microsoft\Windows\INetCache\Content.Word\carbons_4.jpg  (1/2 mark) |

c) Dissolve the remaining solid L in the distilled water and divide the solution into four portions.

1. To the fourth portion, add few drops of acidified potassium chromate (vi) and warm.

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| --- | --- |
| Observations | Inference |
| **Orange acidified potassium chromate VI does not change to green**  *Reject persist or remains or no color change, no observable change*  (1/2 mark) | R-OH absent  (1/2 mark) |

1. To the second portion, add few drops of bromine water and warm.

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| Observations | Inference |
| **Yellow bromine water changes to colorless / decolorized**    **(1/2 mark)** | C:\Users\Owner\AppData\Local\Microsoft\Windows\INetCache\Content.Word\carbons_4.jpg  (1/2 mark) |

1. To the third portion add few drops of acidified potassium manganite (vii) and warm.

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| Observations | Inference |
| **Purple acidified potassium manganate VII changes to colourless**  (1/2 mark) | C:\Users\Owner\AppData\Local\Microsoft\Windows\INetCache\Content.Word\carbons_4.jpg    (1/2 mark) |

1. To the fourth portion add a quarter spatula end-full of sodium hydrogen carbonate.

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| Observations | Inference |
| **Effervescence / bubbles produced**  (1/2 mark) | R-COOH  (1/2 mark) |