

A-Level Chemistry

Paper 1

Unsolved Topical

Past Papers with Marking Schemes

All Variants

2014-2021

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PREFACE

Excellence in learning cannot be claimed without application of concepts in a dexterous way. In this regard one of the logical approach is to start in chunks; like chapter wise learning and applying the concept on exam based questions.

This booklet provides an opportunity to candidates to practice topic wise questions from previous years to the latest. Extensive working of Team MS Books has tried to take this booklet to perfection by collaborating with top of the line teachers.

We have added answer key / marks scheme at the end of each topic for the candidate to compare the his/her answer to the best.

MS Books strives to maintain actual spacing between consecutive questions and within options as per CAIE format which gives students a more realistic feel of attempting question.

Review, feedback and contribution in this booklet by various competent teachers of a subject belonging to renowned school chains make it most valuable resource and tool for both teachers and students.

With all belief in strength of this resource material I can confidently claim that it is worth in achieving brilliance.

Our sincere thanks and gratification to Mr. Waqar Ahmad who took out special time to help compile and manage this booklet. We would also like to appreciate chemistry faculty for reviewing and indorsing it.

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Atoms, Molecules & Stoichiometry

Q18/11/M/J/14

1 Use of the Data Booklet is relevant to this question.

A chemist took 2.00 dm^3 of nitrogen gas, measured under room conditions, and reacted it with a large volume of hydrogen gas, in order to produce ammonia. Only 15.0% of the nitrogen gas reacted to produce ammonia.

What mass of ammonia was formed?

- A 0.213 g B 0.425 g C 1.42 g D 2.83 g

Q9/12/M/J/14

2 Use of the Data Booklet is relevant to this question.

In an experiment, 12.0 dm^3 of oxygen, measured under room conditions, is used to burn completely 0.10 mol of propan-1-ol.

What is the final volume of gas, measured under room conditions?

- A 7.20 dm^3 B 8.40 dm^3 C 16.8 dm^3 D 18.00 dm^3

Q17/13/M/J/14

3 Use of the Data Booklet is relevant to this question.

In an experiment, 0.6 mol of chlorine gas, Cl_2 , is reacted with an excess of hot aqueous sodium hydroxide. One of the products is a compound of sodium, oxygen and chlorine.

Which mass of this product is formed?

- A 21.3 g B 44.7 g C 63.9 g D 128 g

Q6/12/O/N/14

4 Aluminium carbide, Al_4C_3 , reacts readily with aqueous sodium hydroxide. The two products of the reaction are NaAlO_2 and a hydrocarbon. Water molecules are also involved as reactants.

What is the formula of the hydrocarbon?

- A CH_4 B C_2H_6 C C_3H_8 D C_6H_{12}

Q15/12/O/N/14

5 Use of the Data Booklet is relevant to this question.

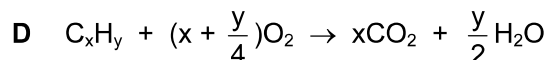
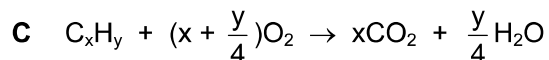
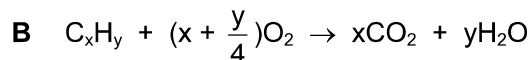
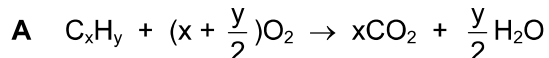
A sample of potassium oxide, K_2O , is dissolved in 250 cm^3 of distilled water. 25.0 cm^3 of this solution is titrated against sulfuric acid of concentration 2.00 mol dm^{-3} . 15.0 cm^3 of this sulfuric acid is needed for complete neutralisation.

Which mass of potassium oxide was originally dissolved in 250 cm^3 of distilled water?

- A 2.83 g B 28.3 g C 47.1 g D 56.6 g

Q29/12/O/N/14

- 6 Which equation correctly represents the balanced equation for the complete combustion of a hydrocarbon with the formula C_xH_y ?



Q6/13/O/N/14

- 7 Use of the Data Booklet is relevant to this question.

In some countries, anhydrous calcium chloride is used as a drying agent to reduce dampness in houses. The anhydrous salt absorbs enough water to form the dihydrate $CaCl_2 \cdot 2H_2O$.

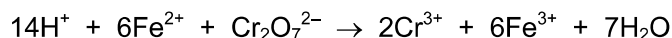
What is the percentage increase in mass?

- A 14% B 24% C 32% D 36%

Q8/13/O/N/14

- 8 Use of the Data Booklet is relevant to this question.

Ferrochrome is an alloy of iron and chromium. Ferrochrome can be dissolved in dilute sulfuric acid to produce a mixture of $FeSO_4$ and $Cr_2(SO_4)_3$. The $FeSO_4$ reacts with $K_2Cr_2O_7$ in acid solution according to the following equation.



When 1.00 g of ferrochrome is dissolved in dilute sulfuric acid, and the resulting solution titrated, 13.1 cm^3 of $0.100 \text{ mol dm}^{-3}$ $K_2Cr_2O_7$ is required for complete reaction.

What is the percentage by mass of Fe in the sample of ferrochrome?

- A 1.22 B 4.39 C 12.2 D 43.9

Q2/12/M/J/15

- 9 The shell of a chicken's egg makes up 5% of the mass of an average egg. An average egg has a mass of 50 g.

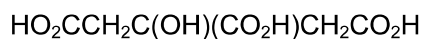
Assume the egg shell is pure calcium carbonate.

How many complete chicken's egg shells would be needed to neutralise 50 cm^3 of 2.0 mol dm^{-3} ethanoic acid?

- A 1 B 2 C 3 D 4

Q29/12/M/J/15

- 10 Citric acid is found in lemon juice.



citric acid

What is the volume of 0.4 mol dm^{-3} sodium hydroxide solution required to neutralise a solution containing 0.005 mol of citric acid?

- A 12.5 cm^3 B 25.0 cm^3 C 37.5 cm^3 D 50.0 cm^3

Q10/13/M/J/15

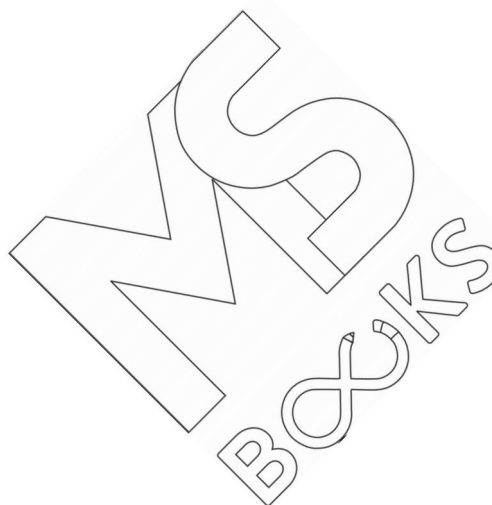
- 11 Use of the Data Booklet is relevant to this question.

1.00 g of a metallic element reacts completely with 300 cm^3 of oxygen at 298 K and 1 atm pressure to form an oxide which contains O^{2-} ions.

The volume of one mole of gas at this temperature and pressure is 24.0 dm^3 .

What could be the identity of the metal?

- A calcium B magnesium C potassium D sodium



ANSWER KEYS

Sr #	Key	Sr #	Key	Sr #	Key	Sr #	Key
1.	B	21.	C	41.	A	61.	C
2.	B	22.	B	42.	A	62.	C
3.	A	23.	C	43.	C	63.	A
4.	A	24.	A	44.	B	64.	D
5.	B	25.	B	45.	D	65.	A
6.	D	26.	B	46.	C	66.	C
7.	C	27.	D	47.	D	67.	A
8.	D	28.	B	48.	B	68.	C
9.	B	29.	B	49.	B	69.	C
10.	C	30.	C	50.	B		
11.	A	31.	D	51.	A		
12.	B	32.	D	52.	C		
13.	C	33.	B	53.	C		
14.	B	34.	C	54.	D		
15.	C	35.	B	55.	C		
16.	D	36.	C	56.	C		
17.	B	37.	D	57.	A		
18.	C	38.	D	58.	C		
19.	D	39.	B	59.	B		
20.	A	40.	C	60.	A		

