

CHEMISTRY

PAPER 1 2020 — 2025

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1 - (9701/11_Summer_2020_Q4) 

10 cm³ of ethane is burned in 45 cm³ of oxygen at a pressure of 101 kPa and a temperature of 200 °C. Complete combustion takes place.

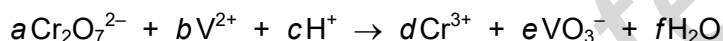
What is the total volume of gas present when the reaction is complete, measured under the same conditions?

- A 30 cm³ B 50 cm³ C 55 cm³ D 60 cm³

2 - (9701/11_Summer_2020_Q8) 

In this question you should use changes in oxidation numbers to balance a chemical equation.

Acidified potassium dichromate(VI) solution can oxidise a solution of V²⁺ ions. The equation for this reaction is shown.



What is the ratio $a:b$ in the correctly balanced equation?

- A 1:1 B 1:2 C 2:1 D 4:1

3 - (9701/11_Summer_2020_Q9) 

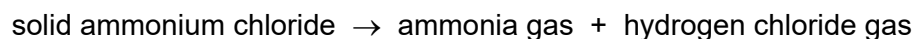
A sample of argon gas has a mass of 0.20 g, at a pressure of 100 000 Pa and a temperature of 12 °C.

Which volume does the gas occupy?

- A $1.2 \times 10^{-4} \text{ cm}^3$
B 5.0 cm³
C 59 cm³
D 119 cm³

4 - (9701/11_Summer_2020_Q11) 

A sample of solid ammonium chloride decomposes on heating.



A total of 2.4×10^{21} molecules of gas is formed.

How many hydrogen atoms are present in the gaseous products?

- A 1.2×10^{21} B 2.4×10^{21} C 4.8×10^{21} D 9.6×10^{21}

5 - (9701/11_Summer_2020_Q13) 

6.90 g of an ammonium salt is heated with an excess of aqueous sodium hydroxide. The volume of ammonia produced, measured under room conditions, is 2.51 dm^3 .

Which ammonium salt is used?

- A ammonium carbonate ($M_r = 96.0$)
- B ammonium chloride ($M_r = 53.5$)
- C ammonium nitrate ($M_r = 80.0$)
- D ammonium sulfate ($M_r = 132.1$)

6 - (9701/11_Summer_2020_Q17) 

0.25 g of anhydrous magnesium nitrate is heated strongly until it completely decomposes.

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

- A 40 cm^3 B 81 cm^3 C 101 cm^3 D 202 cm^3

7 - (9701/12_Summer_2020_Q2) 

A copper ore contains 3.00% of copper carbonate, CuCO_3 , by mass.

Which mass of copper would be obtained from 1 tonne of the ore?

- A 1.91 kg B 3.71 kg C 15.4 kg D 58.4 kg

8 - (9701/12_Summer_2020_Q5) 

In this question you should use changes in oxidation numbers to balance a chemical equation.

The following reaction occurs when MnO_2 is warmed with dilute H_2SO_4 .



What is the ratio of $c : d$ in the correctly balanced equation?

- A 1 : 1 B 1 : 2 C 2 : 3 D 3 : 2

9 - (9701/12_Summer_2020_Q6) 

In this question you should assume air contains 21% oxygen.

What is the minimum volume of air required to ensure complete combustion of 10 cm^3 of butane gas, under room conditions?

- A 14 cm^3 B 27 cm^3 C 65 cm^3 D 310 cm^3

1 – D	21 – B	41 – A	61 – B	81 – C
2 – B	22 – C	42 – A	62 – B	82 – C
3 – D	23 – A	43 – A	63 – A	83 – D
4 – C	24 – A	44 – C	64 – C	84 – C
5 – D	25 – D	45 – D	65 – B	85 – D
6 – C	26 – D	46 – D	66 – A	86 – C
7 – C	27 – A	47 – A	67 – A	87 – A
8 – D	28 – C	48 – C	68 – C	88 – C
9 – D	29 – A	49 – D	69 – C	89 – D
10 – A	30 – C	50 – A	70 – C	90 – B
11 – D	31 – A	51 – C	71 – B	91 – C
12 – C	32 – C	52 – D	72 – B	92 – B
13 – A	33 – B	53 – D	73 – C	93 – C
14 – D	34 – A	54 – B	74 – C	94 – C
15 – B	35 – D	55 – A	75 – C	95 – C
16 – A	36 – A	56 – C	76 – B	96 – C
17 – A	37 – D	57 – D	77 – C	97 – C
18 – D	38 – B	58 – C	78 – A	98 – A
19 – B	39 – D	59 – B	79 – C	99 – B
20 – C	40 – C	60 – D	80 – C	100 – A