

1. **June/2022/Paper\_11/No.17**

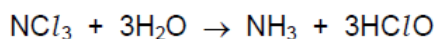
Solid sodium iodide reacts with concentrated sulfuric acid to form more than one product that contains sulfur.

What is the lowest oxidation number of sulfur in these products?

- A** -2                      **B** 0                      **C** +4                      **D** +6

2. **June/2022/Paper\_12/No.11**

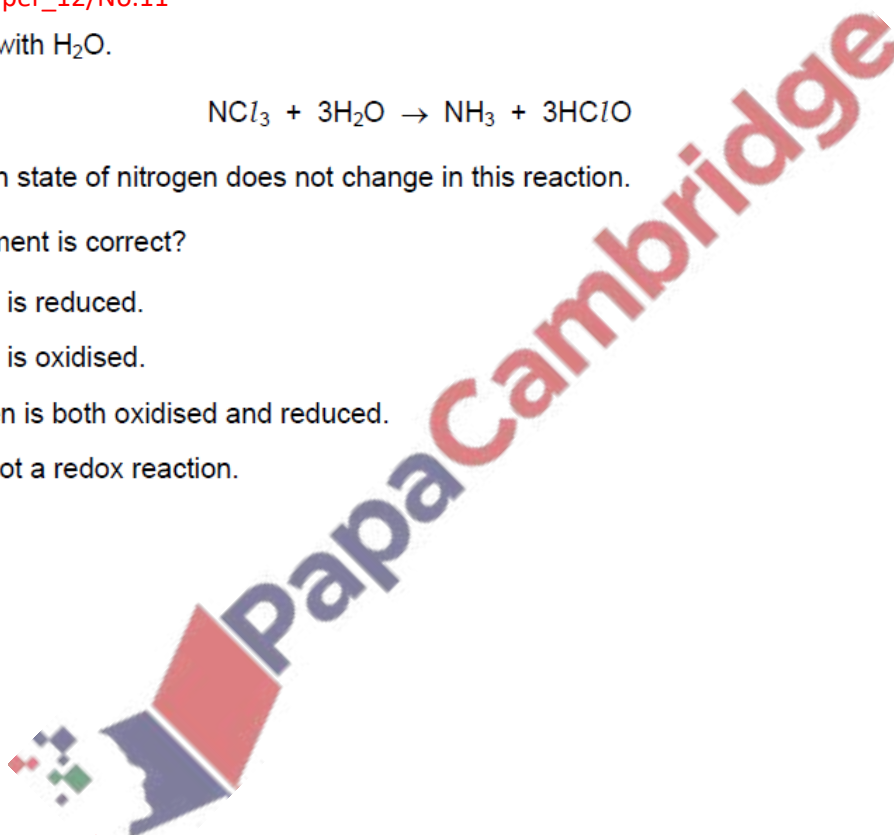
$\text{NCl}_3$  reacts with  $\text{H}_2\text{O}$ .



The oxidation state of nitrogen does not change in this reaction.

Which statement is correct?

- A** Chlorine is reduced.  
**B** Chlorine is oxidised.  
**C** Hydrogen is both oxidised and reduced.  
**D** This is not a redox reaction.



3. **June/2022/Paper\_12/No.12**

In which row do the oxidation numbers of vanadium increase?

	smallest	→	largest
<b>A</b>	$\text{VO}_4^{3-}$	$\text{VO}_3^-$	$\text{VO}_2^+$
<b>B</b>	$\text{VO}^{2+}$	$\text{V}_2\text{O}_3$	$\text{VO}_4^{3-}$
<b>C</b>	$\text{V}_2\text{O}_3$	$\text{VO}^{2+}$	$\text{VO}_3^-$
<b>D</b>	$\text{VO}_4^{3-}$	$\text{VO}_2^+$	$\text{VO}^{2+}$

4. June/2022/Paper\_13/No.11

$\text{NH}_4\text{NO}_3$  decomposes into  $\text{N}_2\text{O}$  and  $\text{H}_2\text{O}$  on heating.

Which statements are correct?

- 1 The ammonium ion is behaving as a reducing agent.
- 2 The nitrate(V) ion is behaving as an oxidising agent.
- 3 It is a redox reaction.
- 4 It is a disproportionation reaction.

- A 1, 2, 3 and 4  
B 1, 2 and 3 only  
C 3 and 4 only  
D 3 only

5. June/2022/Paper\_13/No.12

A student adds 3 mol of acidified  $\text{K}_2\text{Cr}_2\text{O}_7$  to an excess of  $\text{I}^-$  ions.

The chromium is all reduced to  $\text{Cr}^{3+}$  and  $\text{I}^-$  ions are oxidised to  $\text{I}_2$ .

The  $\text{I}_2$  released is reduced back to  $\text{I}^-$  ions by X mol of  $\text{S}_2\text{O}_3^{2-}$  ions.

1 mol of  $\text{I}_2$  is reduced by 2 mol of  $\text{S}_2\text{O}_3^{2-}$  ions.

What is the value of X?

- A 3      B 6      C 9      D 18