**Marks
2**

- Calculate $\Delta G°$ for the reaction: $2N_2O(g) + 3O_2(g) \rightarrow 4NO_2(g)$

  Data: $4NO(g) \rightarrow 2N_2O(g) + O_2(g)$ $\Delta G° = -139.56$ kJ mol^{-1}

  $2NO(g) + O_2(g) \rightarrow 2NO_2(g)$ $\Delta G° = -69.70$ kJ mol^{-1}

Answer:

- Good wine will turn to vinegar if it is left exposed to air because the alcohol is oxidised to acetic acid. The equation for the reaction is:

  $$CH_3CH_2OH(l) + O_2(g) \rightarrow CH_3COOH(l) + H_2O(l)$$
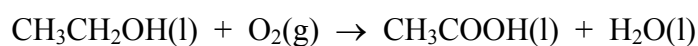
Calculate $\Delta S°$ for this reaction in J K^{-1} mol^{-1}.

2

Data:	$S°$ (J K^{-1} mol^{-1})		$S°$ (J K^{-1} mol^{-1})
$C_2H_5OH(l)$	161	$CH_3COOH(l)$	160.
$O_2(g)$	205.0	$H_2O(l)$	69.96

Answer:

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