1 $N_2H_4(l) + 2H_2O_2(l) \rightarrow N_2(g) + 4H_2O(l)$
What type of reaction is this?

A hydrolysis
B acid-base
C redox
D precipitation

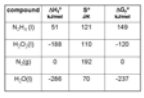
2 The sign of the entropy change for the reaction
$N_2H_4(l) + 2H_2O_2(l) \rightarrow N_2(g) + 4H_2O(l)$ is ...

A positive
B negative
C 0
D can't predict - need more information

3 $N_2H_4(l) + 2H_2O_2(l) \rightarrow N_2(g) + 4H_2O(l)$
In this redox reaction, ...

A Both N_2H_4 and H_2O_2 are reduced
B H_2O_2 is reduced, and N_2H_4 is oxidized
C Both N_2H_4 and H_2O_2 are oxidized
D N_2H_4 is reduced, and H_2O_2 is oxidized

4 Calculate DHo for the reaction
$N_2H_4(l) + 2H_2O_2(l) \rightarrow N_2(g) + 4H_2O(l)$



compound	ΔH_f° kJ/mol	S° J/K	ΔG_f° kJ/mol
$N_2H_4(l)$	51	121	149
$H_2O_2(l)$	-188	110	-120
$N_2(g)$	0	192	0
$H_2O(l)$	-286	70	-237

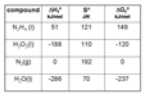
A -149 kJ
B -819 kJ
C +819 kJ
D -423 kJ

5 Calculate DSo for the reaction
N2H4(l) + 2H2O2(l) -->
N2(g) + 4H2O(l)

A +493 J/K
B -493 J/K
C +131 J/K
D +31 J/K

6 Calculate DGo for the reaction:

N2H4(l) + 2H2O2(l) --> N2(g) + 4H2O(l)



A -208 kJ
B -266 kJ
C -857 kJ
D +266 kJ

7 Using the values we just calculated for DHo and DSo, calculate the value of DGo at 298 K for the reaction:

N2H4(l) + 2H2O2(l) --> N2(g) + 4H2O(l)

A +857 kJ
B -857 kJ
C -858 kJ
D -1657 kJ

8 N2H4(l) + 2H2O2(l) --> N2(g) + 4H2O(l) has free energy change -857 kJ at 300 K. At 600 K, the reaction will ...

A be less spontaneous
B be more spontaneous
C have the same spontaneity

9 The free energy of formation of water is -237 kJ at 298 K. At very high temperature, water …

A will decompose.
B will not decompose.
C More information needed.