

Causes of Change

1. -180 kJ
2. 3600 J
3. 570 K
4. 890.2 kJ
5. 28.4 kJ/mol
6. -125.4 kJ/mol
7. 66.4 kJ
8. 296.1 kJ
9. a. 178.49 kJ/mol
b. 106.5 kJ/mol
c. -23.5 kJ/mol
10. a. -1560 kJ/mol
b. -3267 kJ/mol
11. -1367.4 kJ/mol
12. 0.14 kJ
13. a. +
b. -
14. -20.8 kJ/mol
15. Yes
16. a. $\Delta S < 0$
b. $\Delta S < 0$
c. $\Delta S > 0$
d. $\Delta S > 0$
17. a. No, not spontaneous
b. Yes, spontaneous
c. Yes, spontaneous
18. a. $-394.404 \text{ kJ/mol} = 400 \text{ kJ/mol}$
b. Yes, spontaneous
19. Yes, it will occur spontaneously
20. -834.252 kJ/mol
21. -560 kJ/mol