Tutorial 1

1. **6.025 kJ/mol; 0.162 J**
2. **(a) 72.6^{0}C (b) 4.4 kg**
3. **(a) 2.9 dm^3 , 17.03 dm^3 ; (b) 205 K; (c) -396.6 kJ, -519.5 kJ**
4.
5. **-622 J, -700 J**
6. **2.3X 10^{10} kJ, 260 mW**

Tutorial 2

1. **0, 4.125 kJ, 4.125 kJ, 5.372 kJ, 0**
2. -40.13 JK^{-1}
3. **0,** -20.2 J, -20.2 J, -0.35 K, 0.6 J/K
4. **2.9 J/K, -2.9 J/K, 0; (b) 2.9 J/K, 0, 2.9 J/K; (c) 0, 0, 0**
5.
6. **3.5, 0**
7. **476 JK^{-1}L^{-1}**
8. **124 J/K; -124 J/K**
9. **-21.3, +21.7, +0.4 JK^{-1}mol^{-1}**

Tutorial 3

1.
2.
3. **11.1 Torr**
4. **5.56 X 10^3 Pa/K; 2.6%**
5. **234.4 K**
6. **22^{0}C**
7. **0.5**
8. **0.168**

Tutorial 4

1. **B**
2. **1.20 V**
3.
4. **-2.455 V, 1.627 V**
5. **19300 C**
6. **~4**
7. **80.66 J/K**
8.
9.
10. **1.23 x 10^6**