

科目：普通化學

適用：應光系

考生注意：

1. 依次序作答，只要標明題號，不必抄題。
2. 答案必須寫在答案卷上，否則不予計分。
3. 限用藍、黑色筆作答；試題須隨卷繳回。

本 試 題

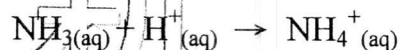
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第 1 頁

編號：395

1. A 50.00 mL sample of an ammonia solution is analyzed by titration with HCl.

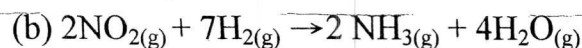
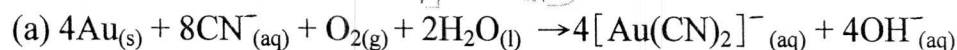
The reaction is



It took 39.47 mL of 0.0984 M HCl to titrate the ammonia. What is the concentration of the original ammonia solution? (30%)

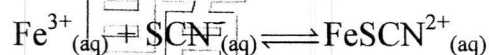
2. Identify the oxidizing agent and the reducing agent in the following reaction.

((a) 10%, (b) 10%)



3. A 1.00 mL sample of  $\text{N}_2(\text{g})$  at  $36.2^\circ\text{C}$  and 2.14 atm is heated to  $37.8^\circ\text{C}$ , and the pressure changed to 1.02 atm. What volume does the gas occupy at this final temperature and pressure? (20%)

4. At a certain temperature,  $K = 1.1 \times 10^3 \text{ L/mol}$  for the reaction:



Calculate the concentrations of  $\text{Fe}^{3+}$ ,  $\text{SCN}^-$ , and  $\text{FeSCN}^{2+}$  at equilibrium if 0.020 mol of  $\text{Fe}(\text{NO}_3)_3$  is added to 1.0 L of 0.10 M KSCN. (Neglect any volume change.) (30%)