

Exam Information

SCH 3UI

June 20/21, 2019

8:30-10:00 a.m.

Rm: 102

Bring a calculator and your periodic table!!! Bring your textbook if you have not returned it yet.

Exam Breakdown Total: 115 marks

Part A: Multiple choice

Total: 50 marks

Matter and Chemical Bonding

16 marks

Chemical Reactions

8 marks

(Activity Series and Solubility Table provided)

Quantities in Chemical Reactions

5 marks

Solutions and Solubility

13 marks

Gases

8 marks

Part B: Written Answer Questions

Total: 65 marks

Matter and Chemical Bonding

9 marks

Chemical Reactions (embedded in other question)

10 marks

Quantities in Chemical Reactions

18 marks

Solutions and Solubility

17 marks

Gases

11 marks

Things to do to prepare for the exam:

- Complete the **Exam Review Package**
- Review your **Unit Tests**
- Review your **Notes/Labs/Assignments**
- **See your teacher for extra help if needed**

INFORMATION PROVIDED ON THE EXAM

INSTRUCTIONS:

1. Read all questions carefully.
2. Record all multiple choice answers on the Scantron sheet provided.
3. Answer all written questions in the space provided, showing complete solutions to all problems.
4. Be sure to round your answers to the correct number of significant digits, and to include all units.

MATERIALS PERMITTED: calculator, periodic table (Sargent-Welch)

ADDITIONAL INFORMATION:

The Ideal Gas Constant (R) is 8.314 kPa L / mol K Avogadro's Number is 6.022×10^{23} particles / mol

$$PV = nRT$$

$$\frac{P_1V_1}{T_1} = \frac{P_2V_2}{T_2}$$

$$K = ^\circ\text{C} + 273.15$$

$$\text{pH} = -\log[\text{H}_3\text{O}^+]$$

$$[\text{H}_3\text{O}^+] = 10^{-\text{pH}}$$

$$\text{pH} + \text{pOH} = 14$$

Table 1: Solubility of Ionic Compounds at SATP

		Anions						
		Cl ⁻ , Br ⁻ , I ⁻	S ²⁻	OH ⁻	SO ₄ ²⁻	CO ₃ ²⁻ , PO ₄ ³⁻ , SO ₃ ²⁻	C ₂ H ₃ O ₂ ⁻	NO ₃ ⁻
Cations	High solubility (aq) ≥ 0.1 mol/L (at SATP)	most	Group 1, NH ₄ ⁺ , Group 2	Group 1, NH ₄ ⁺ , Sr ²⁺ , Ba ²⁺ , Tl ⁺	most	Group 1, NH ₄ ⁺	most	all
	Low solubility (s) ≤ 0.1 mol/L (at SATP)	All Group 1 compounds, including acids, and all ammonium compounds are assumed to have high solubility in water				Ag ⁺ , Pb ²⁺ , Ca ²⁺ , Ba ²⁺ , Sr ²⁺ , Ra ²⁺	most	Ag ⁺

Table 2: Activity Series of Common Metals

Li K Ba Ca Na Mg Al Zn Fe Sn Pb H Cu Hg Ag Au

← react with acids →

← react with water →

Table 3: IUPAC Names and Formulas of Some Common Polyatomic Ions

Ion	Name	Ion	Name
C ₂ H ₃ O ₂ ⁻	acetate	C ₂ ²⁻	carbide
BrO ₃ ⁻	bromate	CO ₃ ²⁻	carbonate
ClO ₃ ⁻	chlorate	CrO ₄ ²⁻	chromate
CN ⁻	cyanide	Cr ₂ O ₇ ²⁻	dichromate
OH ⁻	hydroxide	C ₂ O ₄ ²⁻	oxalate
IO ₃ ⁻	iodate	O ₂ ²⁻	peroxide
NO ₃ ⁻	nitrate	SiO ₃ ²⁻	silicate
MnO ₄ ⁻	permanganate	SO ₄ ²⁻	sulfate
SCN ⁻	thiocyanate	S ₂ O ₃ ²⁻	thiosulfate
NH ₄ ⁺	ammonium	AsO ₄ ³⁻	arsenate
H ₃ O ⁺	hydronium	BO ₃ ³⁻	borate
		PO ₄ ³⁻	phosphate