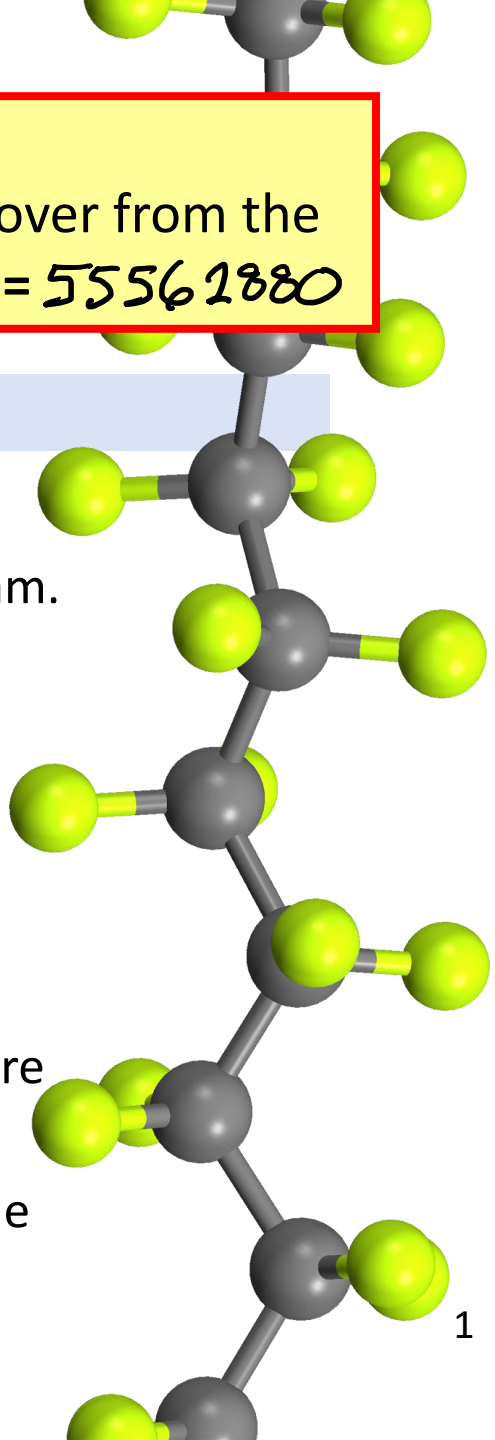
Welcome to our CHEM 4 review session

Go to LearningCatalytics.com to vote on which questions you want me to go over from the first 25 questions from Practice Final, Version A **Session ID = 55562880**

Final Exam: Information

- ✓ Go to Canvas to take the exam.
- ✓ You have a 3.5 hour window from 7:30 am – 11:00 am when you can take the exam.
- ✓ Once you start, you have 2 hours and you must finish by 11 am.
- ✓ See next slide for dates.
- ✓ 200 points total: 40 multiple choice questions; worth 5 pts each.
- ✓ Both questions and answers will be randomized for each student.
- ✓ Can use class handouts, textbook, lecture notes, PowerPoint slides.
- ✓ Get all your materials (such as handouts, calculator and paper/pencil) ready before you start the exam.
- ✓ Even though it is open book, you will not have enough time to look up every single thing, so you must study and be fully prepared going into the exam.



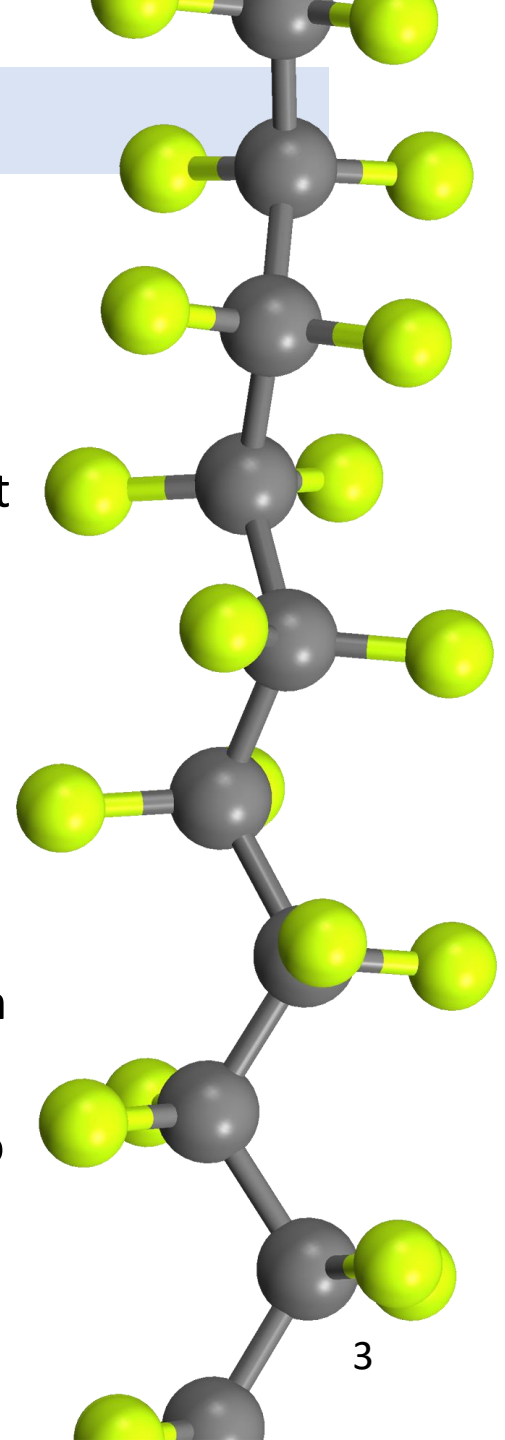
CHEM 4 website: tinyurl.com/SacStateChem4

Week 15: December 7 (Monday)	December 9 (Wednesday)	December 11 (Friday)
Before class: • Read 8.1-8.4 [reaction calculations] (*90 min*) **PAL worksheets for week 15:** A and B	**Before class:** • Read 8.5-8.6 [limiting reactants] (*2 hours*)	**Before class:** • I'll spend the review session answering your questions from **Practice Final exams** (A and B). • Today, before class is the last day to submit late homework for credit.
After class: • Today's PowerPoint slides and recording *(45 min)* • MasteringChemistry #30 (*40 min*) **[Due: W, 12/9]** • Prepare for our review session **[F, 12/11]** and final exam **[see dates next week]**. Practice finals: A and B *(2 hours each)*. • You have until Dec 11 to complete your online CHEM 4 student evaluation in Canvas. Here is a video explaining the process.	**After class:** • Today's PowerPoint slides and recording. Here is a separate recording of the last two practice problems that we didn't get to do in class. *(45 min)* • MasteringChemistry #32 (*40 min*) **[Due: F, 12/11]** • Prepare for our review session **[F, 12/11]** and final exam **[see dates next week]**. Practice finals: A and B *(2 hours each)*. • Before class on **F, 12/11** is the last day to submit late homework for credit.	**After class:** • 8 am review session: PowerPoint slides and recording • 10 am review session: PowerPoint slides and recording • Finish preparing for our final exam **[see dates next week]**. Practice: A and B *(2 hours each)* • Verify your updated homework and clicker grades on Canvas (posted by 12 midnight). • Verify that you have credit for completing the Commit to Study program on Canvas (posted by 12 midnight).

Week 16: December 14 (Monday)		December 18 (Friday)
CHEM 4, Sec 01 (meets MFW @ 8 am) **Final exam time = 8:00 - 10:00 am** • **Covers:** Cumulative, with a slight stress on material since last exam (sections 8.1 - 8.6). • **Practice:** A, B *(2 hours each)* • Log onto our Final using Canvas	Take care everyone and have a safe winter break!	**CHEM 4, Sec 03 (meets MWF @ 10 am)** **Final exam time = 8:00 - 10:00 am** • **Covers:** Cumulative, with a slight stress on material since last exam (sections 8.1 - 8.6). • **Practice:** A, B *(2 hours each)* • Log onto our Final using Canvas

Academic dishonesty:

- ✓ Cannot use any online resources that are not explicitly associated with class.
- ✓ Students posting to sites like Chegg, Bartleby, or Study.com are cheating.
- ✓ **Remember:** Everyone get's hurt by cheating:
  - ✓ Cheaters are stealing the hard work of others by taking a grade that they haven't earned.
  - ✓ Cheaters hurt themselves because they won't be prepared for our next exam or for CHEM 1A/1E, not to mention the MCAT, EIT, DAT, PCAT.
  - ✓ Cheaters risk getting caught and being brought up on disciplinary charges.
  - ✓ SacState's reputation is hurt when employers realize our grads don't know anything!
- ✓ **Bottom line:** There is no reason to cheat in this class. You are smart enough to earn a good grade. So, do your studying and be proud of the grade that you earn.
- ✓ **My promise to you:** There will be no surprises and no trick questions. I just want to see if you have been learning the material that we've covered.



Prerequisites for CHEM 1A/1E

Students can meet the *chemistry prerequisite* in any of the following ways:

- ~~Having a Chemistry Diagnostic Score of 35 or higher.~~ (not available during COVID)
- Completed CHEM ALEKS (CARA) with 85% of the topics completed.
- Passing CHEM 4 with a ***grade of C or better***.

Students can meet the *math prerequisite* in any of the following ways:

Math Prerequisite for CHEM 1A:	**Math Prerequisite for CHEM 1E:**
• A Math ALEKS PPL Score of 61 or higher • Successful completion of Math 12 or the equivalent • Current enrollment in Math 26A, Math 29 or a higher • Score of a 3 or higher on AB or BC Calculus AP Test • Ability to enroll in Math 26A or Math 29	• A Math ALEKS PPL score of 76 or higher • Successful completion of Math 29 or equivalent • Enrollment in a math course of Math 30 or higher • Score of a 3 or higher on AB or BC Calculus AP Test

- Questions can be directed to **Dr. Susan Crawford (crawford@csus.edu)** or **Dr. Roy Dixon (rdixon@csus.edu)**
- Chem department: https://www.csus.edu/college/natural-sciences-mathematics/chemistry/
- Math dept ALEKS PPL: https://www.csus.edu/college/natural-sciences-mathematics/math-placement-exam/

VA Q#7 — not ionic

- ~~B~~ metal + nonmetal
- exception = NH_4^+

A) NH_4Cl B) N_2O_4 C) $NaC_2H_3O_2$ D) MgO

VA Q#19

A) 100 mS → S

1 mS = 10^{-3} S

$\frac{1\,mS}{10^{-3}\,S}$

100 mS $\left(\frac{10^{-3}\,S}{1\,mS}\right)$ = 0.100 S

B) 0.01 kS → S

1 kS = 10^{3} S

$\frac{1\,kS}{10^{3}\,S}$

0.01 kS $\left(\frac{10^{3}\,S}{1\,kS}\right)$ = 10 S

C) 10 S

D) 1,000 cS → S

VA Q #21 ? exp for Mega - (M)

1 M_ = 10^6

VA Q #22

∞ sf → definition (metric ↔ metric or eng ↔ eng)
→ exact # to count.

~~A)~~ 12 eggs = 1 dozen
definition ∞

~~B)~~ 1 in = 2.54 cm
∞ sf

C) 1 kg = 2.205 lb
4 sf
measurement

~~D)~~ 1 gal = 8 pt

VA Q#24

$4.050 \times 400 \times 0.166 = 268.92$

(4) (1) (3) (1)

$= 300 = 3 \times 10^2$

ID 55562880

VA Q#27

$q = mC\Delta T$ $\quad 4.184 \frac{J}{g \cdot °C}$

2.00 L H_2O | density = $\frac{1.00\ g}{mL}$ | ? kJ

$0.0°C \rightarrow 100.0°C$

$T_i \quad T_f$

$\Delta T = T_f - T_i = 100.0°C - 0.0°C = 100.0°C$

$(2.00\ \cancel{L\ H_2O})\left(\frac{1\ \cancel{mL}}{10^{-3}\ \cancel{L}}\right)\left(\frac{1.00\ g}{\cancel{mL}}\right) = 2000\ g\ H_2O$

$q = (2000\ \cancel{g})\left(4.184\ \frac{\cancel{J}}{\cancel{g} \cdot °\cancel{C}}\right)(100.0\ \cancel{°C})\left(\frac{1\ kJ}{10^3\ \cancel{J}}\right)$

VA Q#36

1.0 mol $Mg(HSO_4)_2$? atoms

mol $Mg(HSO_4)_2$ → # $Mg(HSO_4)_2$ → # atoms

12 ~~tires~~ cars 4 tires

$$\left(1.0 \text{ mol } Mg(HSO_4)_2\right)\left(\frac{6.02 \times 10^{23} \text{ } Mg(HSO_4)_2}{1 \text{ mol } Mg(HSO_4)_2}\right)\left(\frac{13 \text{ atoms}}{1 \text{ } Mg(HSO_4)_2}\right)$$

1 doz ~~cars~~ 1 car

VA Q#38

$Fe_2(SO_3)_3$

4.50 g S , ? g $Fe_2(S_2O_3)_3$

g S → mol S → mol $Fe_2(SO_3)_3$ → g $Fe_2(S_2O_3)_3$

$$(4.50\text{ g S})\left(\frac{1\text{ mol S}}{32.07\text{ g S}}\right)\left(\frac{1\text{ mol } Fe_2(S_2O_3)_3}{6\text{ mol S}}\right)\left(\frac{\text{g } Fe_2(S_2O_3)_2}{1\text{ mol } Fe_2(S_2O_3)_2}\right)$$

VA Q #42

P.T. → 207.2

$$207.2 = (207.0)(0.8000) + (x)(0.2000)$$

100% − 80% → 1

VA Q #43

$$2H_2(g) + O_2(g) \rightarrow 2H_2O(g)$$

limiting → $4.00 \text{ mol } H_2 \left(\frac{2 \text{ mol } H_2O}{2 \text{ mol } H_2}\right)\left(\frac{18.016 \text{ g } H_2O}{1 \text{ mol } H_2O}\right) = 72.064 \text{ g } H_2O$

72.1 g H_2O

$$3.00 \text{ mol } O_2 \left(\frac{2 \text{ mol } H_2O}{1 \text{ mol } O_2}\right)\left(\frac{18.016 \text{ g}}{1 \text{ mol}}\right) = 108.096 \text{ g}$$