

Chem 115 Exam 1

α and β versions, 3/4/08 (corrected answer key)

Multiple Choice

α version	
1. B	11. A
2. A	12. D
3. D	13. A
4. C	14. E
5. B	15. D
6. C	16. B
7. E	17. A
8. C	18. B
9. B	19. C
10. A	20. E

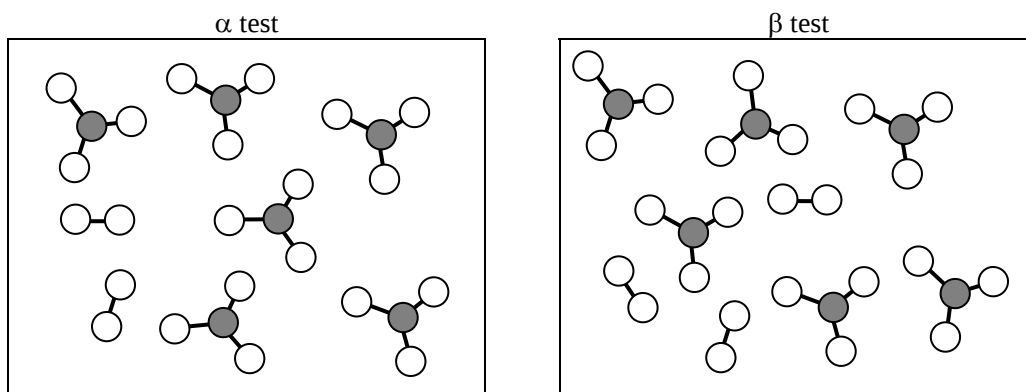
β version	
1. B	11. A
2. E	12. A
3. A	13. A
4. B	14. A
5. C	15. C
6. C	16. B
7. D	17. C
8. D	18. D
9. C	19. C
10. D	20. B

Problem 1

	alpha (α) exam	beta (β) exam
a)	Copper (I) thiosulfate Chloric acid Dinitrogen pentoxide	Iron (II) permanganate Chlorous acid Tetraphosphorous decaoxide
b)	SO ₃ H ₂ CrO ₄ Ni(C ₂ H ₃ O ₂) ₂ or Ni(CH ₃ COO) ₂	SiO ₂ H ₂ C ₂ O ₄ Co(C ₂ H ₃ O ₂) ₂ or Co(CH ₃ COO) ₂
c)	products are: BaSO ₄ (s) + NH ₄ Cl (aq) no reaction for second	products are: NH ₄ Br (aq) + MgCO ₃ (s) no reaction for second
d)	Cr ³⁺ + CO ₃ ²⁻ → Cr ₂ (CO ₃) ₃ or Cr ³⁺ (aq) + CO ₃ ²⁻ (aq) → Cr ₂ (CO ₃) ₃ (s)	PO ₄ ³⁻ + Ni ²⁺ → Ni ₃ (PO ₄) ₂ or PO ₄ ³⁻ (aq) + Ni ²⁺ (aq) → Ni ₃ (PO ₄) ₂ (s)

Problem 2

a)



Correction: There should be 6 molecules of SO₃, and 2 (in α) or 3 (in β) molecules of O₂.

b) correct solution for α : $4.53 \text{ g SO}_3 \times \frac{1 \text{ mol SO}_3}{80.07 \text{ g SO}_3} \times \frac{1 \text{ mol O}_2}{2 \text{ mol SO}_3} \times \frac{32.00 \text{ g O}_2}{1 \text{ mol O}_2} = 0.905 \text{ g O}_2$

correct solution for β : $2.89 \text{ g SO}_3 \times \frac{1 \text{ mol SO}_3}{80.07 \text{ g SO}_3} \times \frac{1 \text{ mol O}_2}{2 \text{ mol SO}_3} \times \frac{32.00 \text{ g O}_2}{1 \text{ mol O}_2} = 0.577 \text{ g O}_2$

Extra credit: Any one of these answers wins 2 points: redox, combination, combustion, synthesis