CHEM 2321 Exam 2 Name:

October 24, 2023 UTEP ID #:

If required, the Exam 2 retake homework will be due Friday, October 27, before 5 pm through <http://organic.utep.edu/quiz>, no exceptions or excuses. Put your name on these sheets so that you can recover your class answers. Expect an email from me.

1.-5. Match each pair of compounds on the left and their corresponding melting points (m.p.) or boiling points (b.p.) in °C to the major reason why they increase. Answers may be repeated. All answers should begin with more….

1. (CH3)3CCO2H (b.p. 164), CH3(CH2)3CO2H (b.p. 186)
2. CH3(CH2)3CO2H (m.p. -34), (CH3)3CCO2H (m.p. 35)
3. CH3CH2CO(CH2)2OH (b.p. 100), (CH3)3CCO2H (b.p. 164)
4. NH2N(CH3)2 (b.p. 64), (NH2CH2)2 (b.p. 116)
5. BrCH3 (b.p. 4), ICH3 (b.p. 42)
6. weight b. polar bonds c. rotational symmetry d. van der Waal interactions e. hydrogen bonds
7. Using the estimate that we learned in class, the following compound should? 

Assume C = 12, H = 1

a. dissolve in water b. emulsify with water c. float in water d. sink in water e. not a.-d.

1. Given that 2 grams of a compound with pKow 0.21 is dissolved in 50 mL of water. To the nearest tenth of a gram, how much compound is extracted into 100 mL of octan-1-ol when mixed in a separatory funnel?

a. 0.7 b. 0.9 c. 1.1 d. 1.3 e. not a.-d.

1. To nearest whole number, what is the pH of a 14 M solution of a compound with pKa of -1.4?

a. -3 b. -1 c. 1 d. 3 e. not a.-d.

1. Given the following pKa’s and initial concentration of reactants, to the nearest tenth, how much product is made in the following reaction? Charges are not shown.



a. 0.2 b. 0.4 c. 0.6 d. 0.8 e. not a.-d.

1. What is the strongest Lewis base in the previous question?

a.  b.  c.  d.  e. not a.-d.

11.-14. Predict which compound is most acidic from the following pairs of compounds. Answer may be repeated. Charges are not shown.

1.  or  a. the first compound
2.  or  b. the second compound
3.  or  c. both compounds have equal acidity
4. PH3 or H2O d. cannot be predicted
5. What is the reason for the correct answer to question 11?

a. electronegativity b. hybridization c. delocalization d. inductive effect e. not a.-d.

16.-19. Match each reaction on the left to a classification on the right. Answers may be repeated. Charges are not shown.

1.  a. addition
2.  b. elimination
3.  c. substitution
4.  d. not a.-d.

20.-22. Match each reaction on the left to a net carbon redox type on the right. Answers may be repeated. Hint: Phosphorous is less electronegative than carbon.

1. The reaction of question 17. a. oxidation
2.  b. reduction
3.  c. not a net redox of carbon
4. The following compound is?

a. *anti* b. *endo* c. *exo* d. *syn* e. not a.-d.

1. Which structure is *endo*?

a.  b.  c.  d.  e. not a.-d.

1. The following compound is?

a. *e* b. *E* c. *z* d. *Z* e. not a.-d.

1. The following compound is?

a. (*1R, 5R*) b. (*1R, 5S*) c. (*1S, 5R*) d. (*1S, 5S*) e. not a.-d.

27. The carbon with the asterisk \* is?

a. *r* b. *s* c. *R* d. *S* e. not a.-d.

28. The compound in the previous question is?

a. chiral b. meso c. achiral but not meso d. not a.-c.