CHEM 2324 Exam 1 Name:

June 21, 2023 UTEP ID #:

If required, the Exam 1 retake homework will be due Friday, June 23, 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 this evening.

Questions 1-10 refer to the following antiviral compound: 

1. How many carbons does the given compound have?
2. 26 b. 27 c. 28 d. 29 e. not a.-d.
3. How many methines does the given compound have?
4. 9 b. 10 c. 11 d. 12 e. not a.-d.
5. How many primary carbons does the given compound have?
6. 5 b. 6 c. 7 d. 8 e. not a.-d.
7. How many secondary methylenes does the given compound have?
8. 1 b. 2 c. 3 d. 4 e. not a.-d.
9. How many unsaturations are in the given compound?
10. 9 b. 10 c. 11 d. 12 e. not a.-d.
11. How many unsaturated nitrogens are in the given compound?
12. 3 b. 4 c. 5 d. 6 e. not a.-d.
13. How many tetrahedral nitrogens are in the compound?
14. 3 b. 4 c. 5 d. 6 e. not a.-d.
15. How many sp2 hybridized carbons are in the compound?
16. 11 b. 12 c. 13 d. 14 e. not a.-d.
17. What is the ideal absolute angle between the two sigma bonds to the phosphorous in this compound? (Hint: Phosphorous is below nitrogen in the periodic table.)
18. 90° b. 109.5° c. 120° d. 180° e. not a.-d.
19. How many hydrogens does the given compound have?
20. 33 b. 34 c. 35 d. 36 e. not a.-d.
21. For every s or p bond there is a(n)?

a. anti-bond b. another bond c. non-bond d. not a.-c.

1. The length in Å (Angstroms) of carbon-carbon single bonds is?

a. 1.1 b. 1.2 c. 1.3 d. 1.4 e. 1.5

1. A cancer drug (C55H84N17O21S3) is hydrogenated to make a compound with molecular formula C55H118N17O21S3. How many rings are in the cancer drug if two of the sulfurs have a valency of 2 and one sulfur has a valency of 3?
2. 1 b. 2 c. 3 d. 6 e. not a.-d.
3. How many total bonds does compound A from question13 have?
4. 201 b. 202 c. 203 d. 204 e. not a.-d.
5. How many sigma bonds does the following cancer drug have? 
6. 43 b. 44 c. 45 d. 46 e. not a.-d.
7. Which Newman projection corresponds to 3-methylpentane?
8.  b.  c.  d.  e. 
9. Given the following energies in kcal/moles (CH3/CH3 eclipsed = 4.1, CH3/H eclipsed = 1.2, H/H eclipsed = 1, CH3/CH3 gauche = 0.8), to the nearest 0.1 of a kcal/mole what is the energy difference between the following Newman projections? 
10. -9.3 b. -2.4 c. 2.4 d. 9.3 e. not a.-d.



1. What is the systematic name of the following compound?
2. 3-(1,1-dimethylethyl)pentane b. 3-*tert*-butylpentane

c. 2,2-dimethyl-3-ethylpentane d. 3-ethyl-2,2-dimethylpentane e. not a.-d.

1. Which *trans* compound has the least energy?
2.  b.  c.  d.  e. 
3. What is the smallest cycloalkane with little angle and tortional strain?
4. cyclopropane b. cyclobutane c. cyclopentane d. cyclohexane e. cycloheptane