

Chemistry 2541, Fall 2017

Quiz 3

(30 points)

Important notes:

- Please use the provided Scantron form for your answers; you can keep the sheet with the questions and can use it as scratch paper
- Do not forget to write your name on the Scantron form
- You will not receive credit for unmarked answers or for more than one mark on answer line
- Your scores will be posted on eGradebook; graded Scantron forms will not be returned to students.

Questions 1-10: Please mark the appropriate box on the front of the Scantron form (3 pts each).

1. Which of the following represents the order of increasing **acidity** for compounds the box?

(1) $\text{CH}_3\text{CH}_2\text{I}$ (2) HCl (3) CH_3NH_2 (4) $\text{CH}_3\text{CH}_2\text{CO}_2\text{H}$

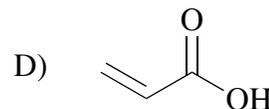
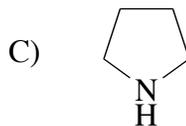
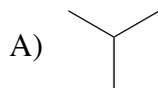
- A) 3 (weakest acid) > 4 > 2 > 1 (strongest acid) B) 1 (weakest acid) > 3 > 4 > 2 (strongest acid)
C) 1 (weakest acid) > 2 > 3 > 4 (strongest acid) D) 3 (weakest acid) > 4 > 1 > 2 (strongest acid)

2. Which of the following represents the order of increasing **basicity** for compounds the box?

(1) CH_3OH (2) CH_3NHNa (3) CH_3ONa

- A) 3 (weakest base) > 2 > 1 (strongest base) B) 3 (weakest base) > 1 > 2 (strongest base)
C) 1 (weakest base) > 2 > 3 (strongest base) D) 1 (weakest base) > 3 > 2 (strongest base)

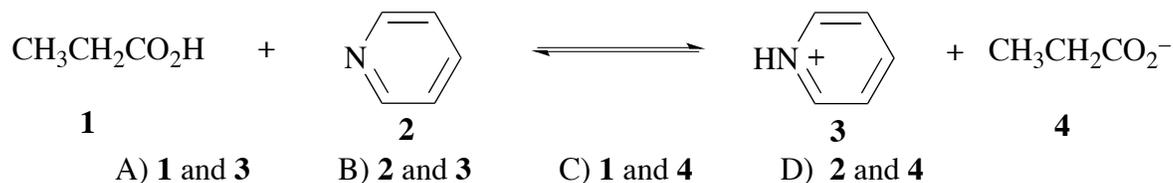
3. Which one of the following compounds has $\text{p}K_a$ with the **highest** numeric value?



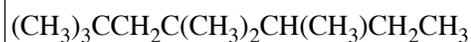
4. Which one of the following compounds is the **strongest base**?



5. Which pair represents a **base** and a **conjugate base** for the reaction in the box?

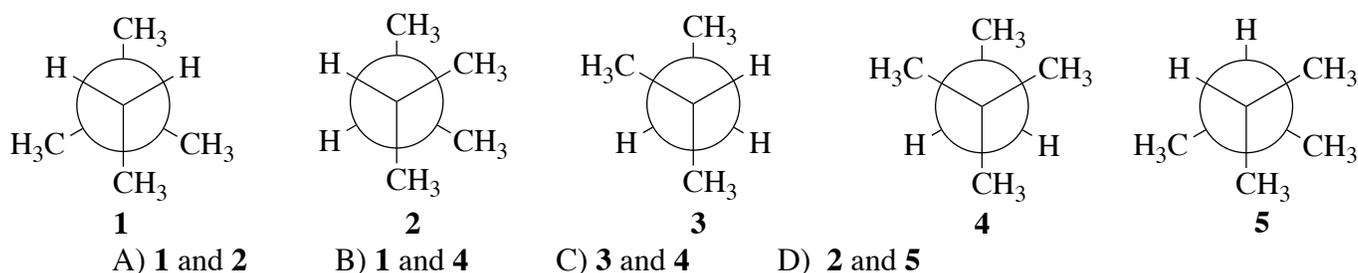


6. What is the **IUPAC name** for the compound shown in the box?

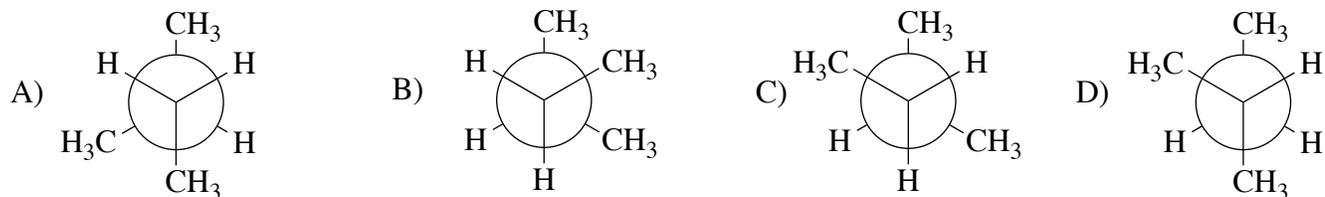


- A) 3,4,4,5,5-pentamethylheptane B) 1-*tert*-butyl-2,2,3-trimethylpentane
 C) 2,2,4,4,5-pentamethylheptane D) 5-ethyl-2,2,4,4-tetramethylhexane

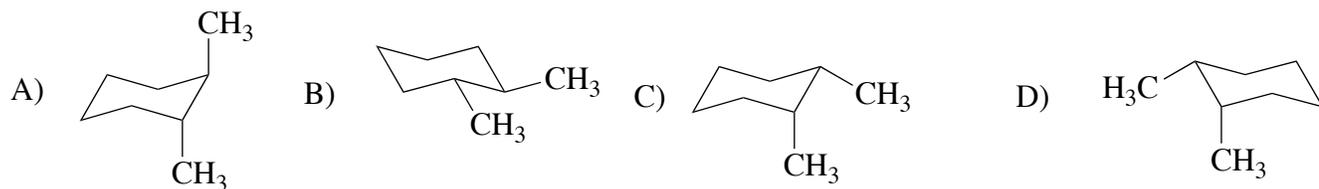
7. Which two of the following Newman projections represent **2,2-dimethylbutane**?



8. Which one of the following conformers of 2-methylbutane has the **highest energy**?



9. Which one of the following structures of disubstituted cyclohexanes is expected to be **most stable**?



10. The molecule shown in the box contains four methyl groups labeled A, B, C, and D. Which of these methyl groups does not have any **diaxial interaction**?

