

Quiz #2

Score: \_\_\_\_\_

1. As drawn, which functional group has the lowest pKa?

- (A) Carboxylic acid *pKa ~4.5*
- (B) Ammonium group *pKa ~9-12*
- (C) Carboxylate *← doesn't have a pKa, no proton to lose.*

2. The structure of ATP is shown. What functional group is enclosed by the dotted line marked A?

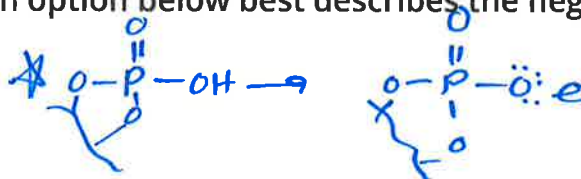
- (A) A conjugate base related to phosphoric acid
- (B) A phosphate / phosphoric anhydride
- (C) An amide of phosphoric acid (= phosphoramidate)
- (D) A phosphate / phosphoric ester
- (E) An acidic proton on a phosphoric acid derivative

3. The structure of ATP is shown. What functional group is enclosed by the dotted line marked B?

- (A) A conjugate base related to phosphoric acid
- (B) A phosphate / phosphoric anhydride
- (C) An amide of phosphoric acid (= phosphoramidate)
- (D) A phosphate / phosphoric ester
- (E) An acidic proton on a phosphoric acid derivative

4. The structure of ATP is shown. Which option below best describes the negatively charged oxygens?

- (A) A conjugate base related to phosphoric acid
- (B) A phosphate / phosphoric anhydride
- (C) An amide of phosphoric acid (= phosphoramidate)
- (D) A phosphate / phosphoric ester
- (E) An acidic proton on a phosphoric acid derivative



5. Which of the following structures is NOT a resonance form of phenol?

- (A) A
- (B) B
- (C) C *Not a resonance form because nuclei have moved.*
- (D) D

6. If the reaction profile shown represents some acid dissociation process, which of the following statements are true? Mark all that apply.

- (A) The species is a strong acid
- (B)  $K_a \gg 1$  ( $\gg$  means much greater than)
- (C) The reaction is endergonic
- (D) The pKa is positive
- (E) The reaction is favorable / spontaneous