

1. Which structures are resonance forms of each other? Mark all that apply.

- A A & B
- B A & C
- C A & D
- D B & C
- E B & D
- F C & D

82% correct

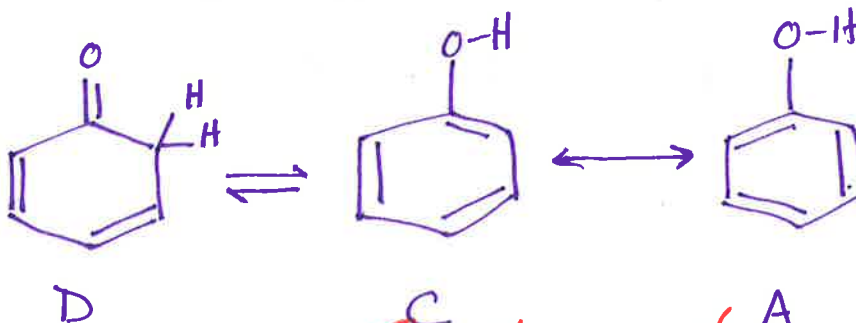
B is the conj. base of any of the others, so it cannot be a resonance form of any of them.

D has a different arrangement of atoms compared to A or C so it cannot be a resonance form of A or C.

2. Which structures are tautomers? Mark all that apply.

- A A & B
- B A & C
- C A & D
- D B & C
- E B & D
- F C & D

41% correct



note the different arrows! A

3. If this energy diagram represents the dissociation of an acidic species, which of the following statements are true? Mark all that apply.

- A The reaction is endergonic. *It's exergonic*
- B $K_a > 1$
- C The products are more stable than the reactants.
- D The reaction will occur.
- E $pK_a < 0$

53% correct

this is a question of kinetics, and we have no information about kinetics

4. Assume this diagram compares two acidic species. A is the stronger acid.

- A True
- B False

100% correct

many confused about this

5. The structure of diphosphate is shown. Which of the following statements are true? Mark all that apply.

- (A) Diphosphate is an analog of an ester.
- (B) Diphosphate is a phosphate ester.
- (C) The structure shown is correct for a high pH, say $\text{pH} > 10$.
- (D) Diphosphate is created (in principle) from two molecules of phosphoric acid.
- (E) Diphosphate as drawn has two strongly acidic protons.

No. All OTS would be deprotonated at $\text{pH} > 10$

12% correct

(A) + (B) are essentially the same thing, but incorrect
diphosphate is a phosphoric anhydride,
consistent w/ answer (D)