

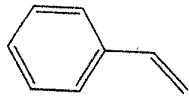
系所別:

化學學系

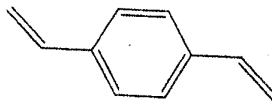
科目:

綜合化學

1. What are the primary, secondary, and tertiary structures of an enzyme? Is the primary, secondary, or tertiary structure of enzyme changed by denaturation? (10 points)
2. Polystyrene can be made more rigid by copolymerizing styrene with divinylbenzene, What purpose does the divinylbenzene serve? Why is the copolymer more rigid? (10 points)



styrene



divinylbenzene

3. You have the following reagents on hand:

Solids (pK_a of acid form is given)

Benzoic acid (4.9)

Sodium acetate (4.74)

Potassium fluoride (3.14)

Ammonium chloride (9.26)

solutions

5.0 M HCl

1.0 M acetic acid

2.6 M NaOH

1.0 M HOCl (7.46)

What combinations of reagents would you use to prepare buffers at the following pH values?

- (a) 4.0 (b) 8.0 (c) 10.0. (9 points)

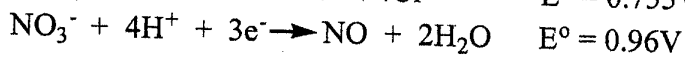
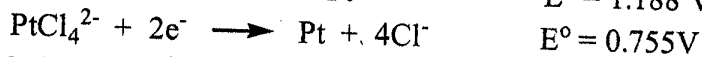
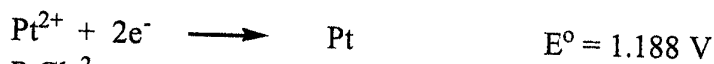
4. Draw a typical structure of a nucleic acid chain. (10 points).

5. Define and give an example of each of the following. (4 points each)

- (a) Addition polymer
- (b) Condensation polymer
- (c) Copolymer
- (d) Thermoset polymer

6. Using molecular orbital mode to calculate the bond order of O_2 , O_2^+ , O_2^- , O_2^{2-} . (15 points)

7. Consider the following half-reactions:



Explain why platinum metal will dissolve in aqua regia (a mixture of hydrochloric and nitric acids) but not in either concentrated nitric acid or concentrated hydrochloric acid individually. (10 points)

8. What is LED? List three LED materials. (10 points)

9. What are the two most important properties that can be used to judge if a material is a superconductor or not? Describe them in detail. (10 points)

參考用