國立屏東大學105學年度研究所碩士班入學考試

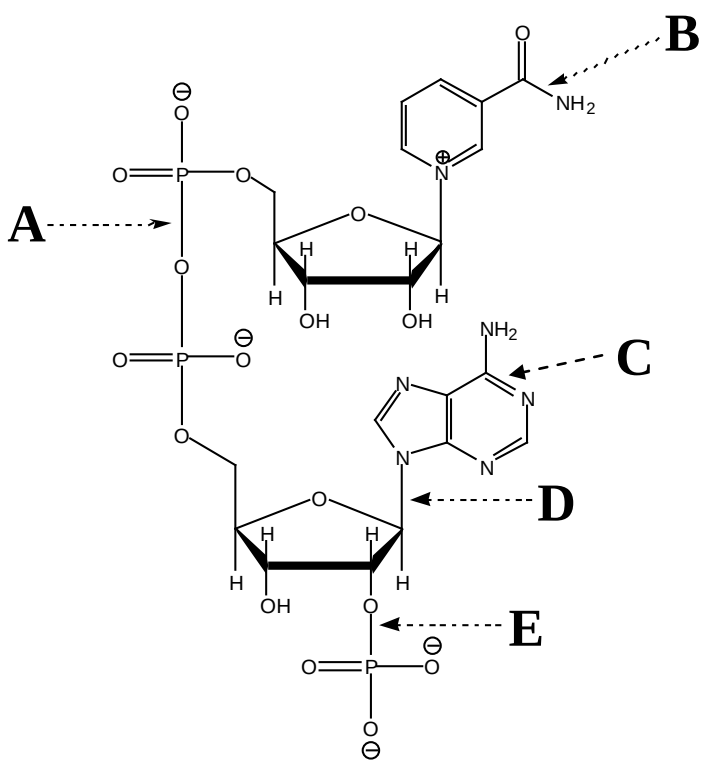
生物化學 試題

（應用化學系碩士班）

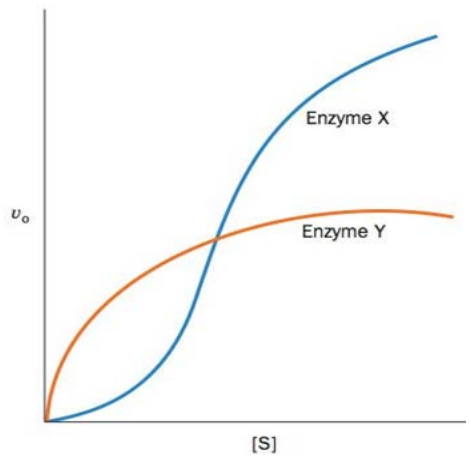
※請注意：1.本試題共二頁。
2.答案題號須標示清楚，並寫在答案卷上，否則不予計分。

1. Salt effect the protein solubility, please describe the mechanisms of salt-in and salt out. (10%)
2. Each of the following reagents or conditions will denature a protein. For each, describe in one or two sentences what the reagent/condition does to destroy native protein structure. (20%)
   (a) urea
   (b) high temperature
   (c) detergent
   (d) low pH
3. Why is silk fibroin so strong, but at the same time so soft and flexible? (10%)
4. Why do smaller molecules elute after large molecules when a mixture of proteins is passed through a size-exclusion (gel filtration) column? (10%)
5. Match: Match the name of the corresponding bond. (10%)

i. a phosphate ester bond _____
ii. an amide bond_____
iii. an anhydride bond_____
iv. a glycosidic bond_____
v. an imine bond _____



6. Under physiological conditions, polylysine assumes a random coil conformation. Under what conditions might it form an α helix? Explain the transition. (10%)
7. A suspension of which of the following is most likely to form a liposome? Explain your answer. (10%)
    I. glycerophospholipids
    II. fatty acids
    III. triacylglycerols
    IV. Sphingomyelins
8. Enzyme X and enzyme Y catalyze the same reaction and exhibit the v_o versus [S] curves shown below. Which enzyme is more efficient at low [S]? Which is more efficient at high [S]? Which one display cooperativity? Explain your answer. (10%)



9. Explain why mutations in oncogenes are generally dominant while those in tumor suppressor genes are recessive. (10%)