南台科技大學 101 學年度研究所考試入學招生考試

系組： 生技系　　准考證號碼：□□□□□□

科目： **生物化學(211)**　　(請考生自行填寫)

注意事項	**一、 請先檢查准考證號碼、報考系(組)別、考試科目名稱，確定無誤後再作答。** 二、 所有答案應寫於答案紙上，否則不予計分。 三、 作答時應依試題題號，依序由上而下書寫，作答及未作答之題號均應抄寫。

問答題，每題 10 分。

1. Discuss how two polysaccharides, starch and cellulose, each having the same subunit (glucose), have completely different properties. Why can we digest starch but not cellulose?
2. How and why can virtually all organisms- plant, animal, and bacteria- use the exact same energy molecule, ATP?
3. Discuss the consequences (in term of ATP production) if $NADH+H^+$ reduced the cytochrome b-c1 complex instead of the NADH dehydrogenase complex.
4. What is cellular respiration? What is common role of FAD and NAD^+ in cellular respiration?
5. Pyruvic acid is a product of glycolysis, but it is not the substance that enters the Krebs cycle. What is that substance, and what must occur if pyruvic acid is to be transformed into this molecule?
6. What is a σ factor? Why is it important in transcription?
7. Explain briefly when happens to eukaryotic mRNA before it can be translate to protein.
8. Explain the following terminology：
   (a)electronegatively
   (b)cooperative binding
   (c)receptor protein
   (d)operon
   (e)endocytosis
9. List three functions of the membrane proteins.
10. What are the physical parameters of a protein that control its migration on electrophoresis?