

# 東吳大學 113 學年度碩士班招生考試試題

第1頁，共3頁

系級	微生物學系碩士班	考試時間	100 分鐘
科目	基礎生物化學	本科總分	100 分

※一律作答於答案卷上(題上作答不予計分)；並務必標明題號，依序作答。

**I. 解釋名詞：共 50 分，每題 5 分。**

1. Helicases
2. Anaerobic respiration
3. Chylomicron
4. Albumin
5. Reverse transcriptase
6. Oxidation-reduction reactions
7. Zymogen
8. Zwitterions
9. Gluconeogenesis
10. Holoenzyme

**II. 單選選擇題：共 25 分，每題 5 分。**

1. In a double-stranded nucleic acid, cytosine typically base-pairs with:
  - A) uracil
  - B) thymine
  - C) inosine
  - D) guanine
  - E) adenosine
  
2. Salt bridges in proteins are an example of \_\_\_\_\_.
  - A) hydrogen bonds
  - B) ionic interactions
  - C) hydrophobic interactions
  - D) van der Waals forces
  - E) london dispersion forces
  
3. Cellulose is
  - A) a linear polymer of glucose with  $\alpha(1\rightarrow4)$  linkages.
  - B) a linear polymer of glucose with  $\beta(1\rightarrow4)$  linkages.
  - C) is a homopolymer of  $\alpha(1\rightarrow4)$ -linked *N*-acetyl-D-glucosamine residues.
  - D) is a homopolymer of  $\beta(1\rightarrow4)$ -linked *N*-acetyl-D-glucosamine residues.
  - E) a linear copolymer of glucose and galactose.

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4. Fibrous proteins typically have large amounts of

- A) disulfide bridges.
- B) salt bridges.
- C)  $\alpha$ -helix.
- D)  $\beta$ -pleated sheets.
- E)  $\alpha$ -helix and  $\beta$ -pleated sheets.

5. The major reason that antiparallel  $\beta$ -stranded protein structures are more stable than parallel  $\beta$ -stranded structures is that the latter:

- A) have weaker hydrogen bonds laterally between adjacent strands.
- B) have fewer lateral hydrogen bonds than antiparallel strands.
- C) do not stack in sheets as well as antiparallel strands.
- D) do not have as many disulfide crosslinks between adjacent strands.
- E) are in a slightly less extended configuration than antiparallel strands.

**III. 問答題：共 25 分。**

1. 請描述純化蛋白質方法中，何為膠體過濾層析法(gel-filtration chromatography)與膠體電泳法(gel electrophoresis)的原理，並請說出其不同處。(本題總分 10 分)
2. 請問何為 Myoglobin 與 Hemoglobin?並以下圖，解釋何為波爾效應(Bohr effect)。(本題總分 15 分)

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第3頁，共3頁

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