

國立中央大學103學年度碩士班考試入學試題卷

所別：物理學系生物物理碩士班 不分組(一般生) 科目：普通生物 共 1 頁 第 1 頁

本科考試禁用計算器

*請在試卷答案卷(卡)內作答

1. (共 25 分) Cells and Membranes

- (A) (6 分) What are the functions of cell membrane?
- (B) (6 分) What are the compositions of cell membrane?
- (C) (6 分) Please draw the two typical kinds of cell membrane of bacteria.
- (D) (7 分) What is membrane potential? How does a cell generate it?

2. (共 20 分) Deoxyribonucleic acid (DNA)

- (A) (6 分) What are the three main parts of a DNA nucleotides?
- (B) (4 分) Please explain the polymerization of nucleotides.
- (C) (5 分) Please describe the DNA structure within cell including size details etc.
- (D) (5 分) What kind of forces to hold the DNA structure?

3. (共 25 分)

Please explain the following terms in details.

- (A) Genotype. (B) Phenotype. (C) Mitosis. (D) Meiosis. (E) Homo sapiens

4. (共 30 分) Antibiotics

- (A) (5 分) What is antibiotic? Please list the classes of antibiotics.
- (B) (5 分) What is the mechanism of ampicillin to inhibit bacteria growth?
- (C) (10 分) What is superbug? Please describe the possible mechanisms for the existence of superbug.
- (D) (10 分) If you were a bio-physicist, please think about some possible new methods to make new antibiotics?

參考用