# 國立中山大學100學年度碩士班招生考試試題

科目：生物化學【生科系碩士班甲組、乙組】

問答題 **(100 分)**

**1.** (1) Describe how to determine the primary structure of a protein and (2) discuss why it is important to know the primary structure of a protein. **(14 分)**

**2.** Discuss (1) why myoglobin and hemoglobin have different oxygen-binding properties and (2) the physiological significance of the differences. **(14 分)**

**3.** Describe (1) the structure, (2) the composition, and (3) the functions of biological membranes. **(12 分)**

**4.** Describe (1) how DNA and RNA differ and (2) the physiological significance of the differences. **(12 分)**

**5.** Describe the Sanger's chain termination or dideoxy method for determining the primary structure of nucleic acids. **(14 分)**

**6.** The chemiosmotic mechanism and the conformational coupling mechanism have been proposed to explain the coupling of electron transport and ATP production. Describe and compare these two mechanisms. **(12 分)**

**7.** A second messenger is a molecule that acts as a linker between the binding of a hormone to a cell membrane receptor and the metabolic effect the hormone has. Describe how the common second messenger cyclic AMP (cAMP) works. **(12 分)**

**8.** Matching the genetic diseases with the respective biochemical defects: **(10 分)**

Genetic diseases:

(1) Phenylketonuria (PKU)
(2) Gout
(3) familial hypercholesterolemia
(4) Lesch-Nyhan syndrome
(5) Lactose intolerance

Biochemical defects:

(A) Absence or dysfunction of LDL receptors
(B) Lactase deficiency
(C) Hypoxanthine-guanine phosphoribosyltransferase deficiency
(D) Phenylalanine hydroxylase deficiency
(E) Excess uric acid