國立成功大學

115學年度碩士班招生考試試題

編　號：203

系　所：細胞生物與解剖學研究所

科　目：細胞生物學

日　期：0204

節　次：第 1 節

注　意：1.不可使用計算機
2.請於答案卷(卡)作答，於試題上作答，不予計分。

※ 考生請注意：請於答案卷依序寫上題號並以中文或英文作答，於本試題紙上作答者，不予計分。本試題不可使用計算機或任何電子裝置應考。

※ Write down the question numbers in series on the answer sheet, followed by your answers to each question in either Chinese or English. The use of calculator or electronic devices in this exam is strictly prohibited.

一、名詞解釋 (60 分，每題 4 分。)

以細胞生物學觀點解釋以下名詞。**任選 15 題作答**，超過 15 題不計分。

PART ONE: Definition of terminology (60%)

Directions: *Explain the following terms from the aspect of Cell Biology. Among the total of 20 terms below, you are allowed to* ***select 15 and ONLY 15*** *terms to answer. Any additional selections of terms will not be scored. Each term counts 4 points (4%).*

- Nucleolus
- Cell junctions
- Ribosome
- DNA double helix
- Meiosis
- Mitochondria
- Post-transcriptional modification
- Chromatin
- Oxidative phosphorylation
- Lysosome
- P53
- Transfer RNA (tRNA)
- Cilium
- Myofibril
- Glycolysis
- Genome
- DNA methylation
- Autophagy
- Hemoglobin
- Polymerase chain reaction (PCR)

二、問答題 (40 分)

詳讀並回答以下問題。若有需要可繪圖或製表輔助闡述論點。

PART TWO: Essay (40%)

Directions: *Read and answer the following questions in a well-organized way. Draw pictures or tables to illustrate your points, if necessary.*

1. What are the differences between diffusion and active transport? Give examples on how cells exchange materials across the cell membrane by these two different methods. (8%)

2. What is a cell cycle? Explain the major phases of the cell cycle and the function of cell cycle checkpoints. (10%)

3. Cells may transfer substances between organelles (e.g. ER, Golgi apparatus, lysosomes) and the cell surface by membranous vesicles. What is the general mechanism of vesicular transport? What are its roles in exocytosis, endocytosis, and intracellular transport? (10%)

4. G-protein-coupled receptors (GPCRs) initiate various intracellular responses by activating downstream signaling cascades. Please use cyclic AMP, inositol phospholipid, or other pathways as examples to explain how GPCRs trigger second messengers to regulate cell activities. (12%)