

八十五學年度 生命科學 系(所) 生物醫學甲組 碩士班研究生入學考試  
科目 生理學 科號 0903 共二頁第 1 頁 \*請在試卷【答案卷】內作答

### Part I.

1. Describe the immune mechanisms of following approaches used in immune therapy of cancer. (a) adoptive transfer of LAK, (b) adoptive transfer of TII., and (c) cytokine tumor vaccine. (10%)
2. (a) Distinguish between different types of formed elements (blood cells) of the blood in term of their origin, appearance, and function. (b) Use a graph with X-axis as a function of cell size and Y-axis as a function of granularity to display the relative position of these formed elements. (6%)
3. Compare the roles of calcium on (a) axon cells, (b) dendrite cells, (c) epinephrine responding cells, (d) skeletal muscle cells, and (e) smooth muscle cells. (10%)
4. Draw the membrane potential produced in an axon membrane, which has been depolarized to just above a threshold level, under the following conditions (a) a normal physiological condition, (b) in the presence of a specific  $K^+$  channel blocker, (c) in the presence of a specific  $Na^+$  channel blocker, (d) in the presence of an inhibitor of  $Na^+/K^+$  pump, or (e) in the absence of  $Ca^{++}$  ion. (8%)
5. (a) List the trophic hormones produced by anterior pituitary gland, (b) describe how the release of these hormones is regulated by hypothalamus, and (c) how the secretion of releasing hormones by hypothalamus is regulated by adenohypophysis. (6%)
6. Compare the following nerve system diseases in term of clinical symptoms, target cell(s) damaged, pathological appearance, and CNS region(s) affected. (a) MS (multiple sclerosis), (b) Parkinson's disease, (c) Alzheimer disease, (d) AIDS dementia and (e) ataxia. (10%)

### Part II.

#### I. Distinguish the following terms (10%)

1. Secretin and enterogasterone
2. Renin and rennin

#### II. Answer the following questions (20%)

1. Describe the importance of coronary circulation, and discuss the cause and result of coronary thrombosis.
2. Describe the mechanism of breathing, and how does carbon dioxide regulate breathing?

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Part III. Define following terms:

20%

1. Basal metabolic rate (BMR)
2. Calcitonin
3. Calmodulin
4. Bradykinin
5. Hematopoiesis