

94 學年度 生命科學院/生命科學院結構生物學程 系 (所) 甲 組碩士班入學考試

科目 細胞生物學 科目代碼 0806/1105 共 1 頁 第 1 頁 *請在試卷【答案卷】內作答

1. What is the **main difference** of direct and indirect active transport? Please **give** the examples for these two kinds of active transport and **indicate the main difference** in the examples you provide. (10%)
2. If you are some kind of organism living in the place with obvious temperature fluctuation, you should be able to regulate your membrane fluidity in order to survive. Base on your knowledge of membranes, please (i) indicate **one specific** way for you to regulate your membrane fluidity, and (ii) give the theory for your answer. (7%)
3. As you known, many membrane proteins are glycosylated. What does "glycosylation" mean? In which organelles are these proteins glycosylated? Are the glycosylated parts of the membrane protein located inside or outside of the cell? Why? (10%)
4. Please provide two different approaches for study an organelle in cells. (Hint: the emergence of modern cell biology and the discovering of organelles) (6%)
5. Design an experiment to show cadherin is involved in homophilic interaction. (10%)
6. What are two effects of elevated calcium in presynaptic axonal terminals during the transmission of a neural signal across a synapse? (8%)
7. Why is Taxol a good drug for breast cancer? (6%)
8. What are the results if you express the genes of Tau and MAP2C in a nonneuronal cell line? Why? (10%)
9. Please describe how the cell cycle is controlled by different cyclin-dependent kinase molecules. (9%)
10. Please define the following terms: (24%)
 - (1) Nitric oxide
 - (2) Ras
 - (3) Transforming growth factor receptor pathway
 - (4) cAMP