

國立中央大學九十學年度轉學生入學試題

生命科學系 二年級 科目： 普通生物學 共 / 頁 第 / 頁

普通生物學 轉學考試題 (7, 2001)

問答題

1. Please describe the major contribution by the following scientists:
(每小題 5 分; 共 25 分)
 - (1) James Watson and Francis Crick (1950s)
 - (2) Malvin Calvin (1940s)
 - (3) Peter Mitchell (1970s)
 - (4) Barbara McClintock (1940s-1970s)
 - (5) Alfred Hershey and Martha Chase (1950s)
2. Carl Woese in 1970s used ribosomal RNA analysis to identify a third form of life, Archaea. And his research result divided all the life forms into three domains: Archaea, Bacteria and Eucarya. Please describe how he carried the experiment to obtain the result. (7 分) Also, please compare the three life forms. (8 分)
3. Please describe the role of acetylcholine and Ca^{2+} in muscle contraction (10 分)
4. What two features of the respiratory system in birds make it the most efficient of all terrestrial respiratory systems? (10 分)
5. Waste disposal is as important to homeostasis as water and solute balance. Metabolism produces a number of toxic by-products, particularly the nitrogenous (nitrogen-containing) wastes that result from the breakdown of proteins and nucleic acids. The form of an animal's nitrogenous wastes depends on the animal's evolutionary history and its habitat. Please describe what is the nitrogenous wastes excreted by (a) most fish (b) mammals (c) reptiles and birds, and explain why? (10 分)
6. 那些植物細胞的胞器是動物細胞所沒有的 (3 分)? 請分析它們的構造[可用圖示] (4 分)及功能 (3 分)。
7. 請試以圖示光合作用時葉綠體進行電子傳遞鏈的細胞地方與被光子激發、質子幫浦(proton pump)與 ATP 合成的位置, 並標示氧氣與 NADPH 形成的地方。(10 分)
8. 解釋名詞 (每題 2 分)
 - (1) Casparian strip
 - (2) Sugar source and Sugar sink
 - (3) Mycorrhiza
 - (4) Photoperiod
 - (5) Auxin

參考用