

1. 請就在細胞中根據基因訊息進行蛋白質合成過程之主要步驟加以簡要說明 (9 %)
2. 畫圖說明細菌處於 log phase 時其生長與培養時間之關係 (6%)
3. 簡要說明細菌 Gram stain 之原理及其可能之反應 (8%)
4. 何謂 plasmid DNA, chromosomal DNA? 簡述從細菌體中分離取得這些成份之主要基本步驟 (9%)
5. 說明下列名詞 (18%)
 - A. Bacteriostatic effect
 - B. Rickettsiae
 - C. Lysogenic bacteria
 - D. Plasmolysis
 - E. Chemoheterotroph
 - F. Spread-plate method
6. List and describe five methods that are usually used in the classification of bacteria. (10%)
7. List and describe five techniques of genetic engineering. (10%)
8. Diagram and discuss the growth process or curve of bacteriophage. (8%)
9. Using glucose as a substrate, list the end products (including energy generation) of homolactics and heterolactics fermentation. Which enzymes play crucial roles in each pathway? (8%)
10. Briefly discuss the function of *lac* genes and the expression and repression of *lac* genes. (8%)
11. Define (1) aerobic respiration and anaerobic respiration (2) psychrophilic and psychrotrophic microorganisms. (3) leading strand of DNA and lagging strand of DNA (6%)