

國立中央大學98學年度碩士班考試入學試題卷

所別：系統生物與生物資訊研究所碩士班 一般生 科目：生物化學 共 1 頁 第 1 頁
*請在試卷答案卷(卡)內作答

一、填充題 (一格 2 分)

1. Protein : peptide bond = nucleic acid : _____
2. _____ resin commonly is used for purifying eukaryotic mRNA.
3. Proteins tend to be least soluble at their _____ point.
4. Bacterial cell walls have a polysaccharide layer called _____.
5. Fatty acid is composed of a long _____ tail and a _____ head.
6. Acetyl-CoA regulates gluconeogenesis by activation of _____.
7. Eukaryotic DNA wrapped around _____ proteins to form _____.
8. _____ serves as a scaffold for ribosomal proteins.
9. _____ in *E. coli* is the peptidyl transferase, a non-protein enzyme.
10. A _____ is a method combining gel electrophoresis and probe hybridization to check for the presence of a DNA sequence.
11. In Sanger's chain termination method of DNA sequencing, the chain is terminated by _____.
12. In bacteria, interaction between _____ and _____ control transcription by controlling access of RNA polymerase to the _____.

二、簡答題

1. Please list the non-covalent interactions. (8 分)
2. Please compare the differences of glycerophospholipids and sphingolipids. (4 分)
3. What are gangliosides? (4 分)
4. Please draw the titration of lysine with hydroxide and mark the isoelectric point in the figure. (10 分) α -COOH $pK_a=2.2$, α -NH₃⁺ $pK_a=9.0$, R group $pK_a=10.5$
5. Which wavelength is used to roughly detect protein? (2 分)
6. Please explain the mechanism of protein salting in and salting out. (8 分)
7. Please write down the four levels of protein structure. (8 分)
8. Please write down 5 forms of RNA. (10 分)
9. What are the differences among nucleoside, nucleotide and nucleic acid? (6 分)
10. Please write down three important components of a useful cloning plasmid. (6 分)
11. What ratio is usually used to define the catalytic efficiency of an enzyme? (2 分)

參考用