

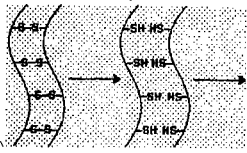
大葉大學 95 學年度 研究所碩士班甄試 招生考試試題紙

系所別	組別	考試科目 (中文名稱)	考試日期	節次	備註
分子生物研究所		生物化學	12月19日	第一節	P.2-1

註：考生可否攜帶計算機或其他資料作答，請在備註欄註明（如未註明，一律不准攜帶）

背面有試題

選擇題：(每題 3 分，共 36 分)

- All of the following are considered "weak" interactions in proteins, *except*:
A) hydrogen bonds. B) hydrophobic interactions. C) ionic bonds. D) peptide bonds. E) van der Waals forces
- A prosthetic group of a protein is a non-protein structure that is:
A) a ligand of the protein. B) a part of the secondary structure of the protein.
C) a substrate of the protein. D) permanently associated with the protein.
E) transiently bound to the protein.
- For amino acids with neutral R groups, at any pH higher the pI of the amino acid, the population of amino acids in solution will have:
A) a net negative charge. B) a net positive charge. C) no charged groups. D) no net charge. E) positive and negative charges in equal concentration
- In a mixture of the five proteins listed below, which should **elute second** in size-exclusion (gel- filtration) chromatography?
A) cytochrome *c* $M_r = 13,000$ B) immunoglobulin G $M_r = 145,000$
C) ribonuclease A $M_r = 13,700$ D) RNA polymerase $M_r = 450,000$
E) serum albumin $M_r = 68,500$
- The α -keratin chains indicated by the diagram below have undergone one chemical step. To alter the shape of the α -keratin chains—as in hair waving—what subsequent steps are required?


A) Chemical oxidation and then shape remodeling B) Chemical reduction and then chemical oxidation
C) Chemical reduction and then shape remodeling D) Shape remodeling and then chemical oxidation
E) Shape remodeling and then chemical reduction
- The role of an enzyme in an enzyme-catalyzed reaction is to:
A) bind a transition state intermediate, such that it cannot be converted back to substrate.
B) ensure that all of the substrate is converted to product.
C) ensure that the product is more stable than the substrate.
D) increase the rate at which substrate is converted into product.
E) make the free-energy change for the reaction more favorable.
- Which of the following is *not* a reducing sugar?
A) Fructose B) Glucose C) Glyceraldehyde D) Ribose E) Sucrose

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背面有試題

8. Which of the following is *not* true of the fatty acid synthase and the fatty acid β -oxidation systems?
- A derivative of the vitamin pantothenic acid is involved.
 - Acyl-CoA derivatives are intermediates.
 - Double bonds are oxidized or reduced by pyridine nucleotide coenzymes.
 - The processes occur in different cellular compartments.
 - The processes occur in the mitochondrial matrix.
9. Which of the following is *not* required in the synthesis of fatty acids?
- Acetyl-CoA
 - Biotin
 - HCO_3^- (CO_2)
 - Malonyl-CoA
 - NADH
10. Nonessential amino acids:
- are amino acids other than those required for protein synthesis.
 - are not utilized in mammalian proteins.
 - are synthesized by plants and bacteria, but not by humans.
 - can be synthesized in humans as well as in bacteria.
 - may be substituted with other amino acids in proteins.
11. An important intermediate in the biosynthetic pathway to aromatic amino acids is:
- benzoic acid.
 - lactate.
 - orotate.
 - shikimate.
 - α -ketoglutarate.
12. The compound that condenses with CO_2 in the first reaction of carbon dioxide assimilation is:
- 3-phosphoglycerate.
 - ribose 1,5-bisphosphate.
 - ribulose 1,5-bisphosphate.
 - ribulose 5-phosphate.
 - rubisco.

問答題: (共 64 分)

1. Explain primary, secondary, tertiary, and quaternary structure of protein as well as motif and domain (24 分) .
2. 比較原核細胞(Prokaryotic)與真核細胞(Eukaryotic)的 DNA 複製，詳述論之 (15 分)。
3. 原核細胞與真核細胞的轉錄(Transcription)和轉譯(Translation)有何異同? 試申論之 (15 分)。
4. What is Fluid mosaic model for membrane structure (10 分)?