

本試題是否可以使用計算機: 可使用, 不可使用 (請命題老師勾選)

1. Draw the structures of the various types of forces that are responsible for maintaining a protein in its native structure. (8%)
2. Describe the principle of molecular exclusion chromatography (or gel-filtration) and its application in determining molecular weight of proteins. (8%)
3. Compare β -oxidation and biosynthesis of fatty acids with respect to: (a) location of the reactions (b) structures of intermediates during the processes (c) energetics (10%)
4. Explain: (a) Semi-conservative replication of DNA (b) Elongation of peptide chain during translational biosynthesis of proteins. (8%)
5. What effect would the following mutation in E. Coli probably have on the expression of lac. operon, which is normally an inducible enzyme system. (a) Mutation in the I gene (b) Mutation affecting the synthesis of cyclic AMP (c) Mutation affecting the production of CAP (cyclic AMP receptor protein) (10%)
6. What are the mechanisms for the transport of molecules across the membrane? (8%)
7. What are the basic requirements for a plasmid to be a cloning vector? What are the requirements for a plasmid to be an expression vector? (8%)
8. What four hormones play a central role in maintaining normal blood sugar levels? What are the primary target cells for each of these four hormones? (8%)
9. Give 4 reactants that may react with phosphoribosyl pyrophosphate (PRPP) in the metabolism of nucleotides. (8%)
10. Define the following terms: (24%)
 - a. Restriction endonuclease
 - b. Apoptosis
 - c. Tumor suppressor genes
 - d. Lagging strand
 - e. Post transcriptional modification
 - f. Enzyme-linked immunosorbent assay