

下列各題的答案請按照次序寫在答案紙上。

1. List two examples of non-informational nucleic acid and two examples of informational nucleic acid not found in chromosomes. (8%)
2. Define ribozymes and briefly describe the structure and function of one example of a ribozyme. (10%)
3. Design an experiment to demonstrate that DNA replication in *E. coli* is semiconservative. (10%)
4. Define Eicosanoids and name three classes of these. (8%)
5. Why must the DNA polymerase used in the polymerase chain reaction be heat stable? (3%)
6. Why is it necessary to have protein in our diet? (5%)
7. Define (a) proto-oncogene (3%) and (b) Okazaki fragments (3%).
8. Why is lysozyme an effective "killer" of bacteria? (4%)
9. What does a noncompetitive inhibitor differ from a competitive inhibitor? (4%)
10. What are the α -helix and β -sheet structures both characterized by? (4%)
11. Explain why a protein is frequently least soluble at its isoelectric pH. (4%)
12. What is the basic difference between a transaminase reaction and the glutamine synthetase reaction? (4%)
13. What is the main purpose of the pentose phosphate pathway? (4%)
14. What is the main function of the glyoxylate cycle? (4%)
15. Pyruvate labeled with ^{14}C in carbon atom 2 is incubated with liver tissue. Which carbon atoms of β -hydroxy- β -methyl-glutaryl CoA will become labeled rapidly? (4%)
16. Contrast the activities of phosphofructokinase and fructose diphosphate phosphatase by showing (6%)
 - (a) reactions that they catalyze
 - (b) positive and negative modulators of each

Questions 17-22. Multiple choice - Select the correct answer in each case. (12%)

17. The cytochromes are involved in _____. (A. electron transport B. hydrogen transport C. proton transport D. water transport)
18. The final electron acceptor in cellular aerobic respiration is _____. (A. water B. oxygen C. NAD^+ D. ADP)
19. Oxidation of fatty acids does not take place in _____. (A. lung B. water C. heart D. erythrocyte)
20. The formation of carbohydrates from non-carbohydrate precursors such as amino acids and lactic acid is called _____. (A. phosphorylysis B. gluconeogenesis C. glycogenogenesis D. glycolysis)
21. The intracellular location of fatty acid synthesis is the _____. (A. cytosol B. mitochondria C. endoplasmic reticulum D. microsomes)
22. A protein solution exhibited an absorbance of 1.8 at 280 nm. In order to achieve an absorbance of 0.9 the solution would be _____.
 - A. diluted with an equal volume of solvent
 - B. diluted with twice the volume of solvent.
 - C. concentrated to one half the original volume.
 - D. concentrated to 1/4 the original volume.