

1. Which of the following components does not directly participate in translation ?  
(multiple choice) (5%)
  - A) mRNA
  - B) aminoacyl-tRNA
  - C) DNA
  - D) Peptidyl transferase
  - E) DNA polymerase III
  - F) Ribosomes
  
2. Which of the following description is character of DNA transcription ? (multiple choice) (5%)
  - A) Conservation
  - B) Semiconservative
  - C) Phosphodiester bonds are formed
  - D) Catalyzed by polymerases
  - E) Final product is RNA
  - F) Newly formed polymers are complementary to a template
  - G) Final product is a polypeptide
  
3. Which of the following biochemical processes are posttranslational events ?  
(multiple choice) (5%)
  - A) Modification of amino acid residues
  - B) Addition of FAD and other prosthetic groups to proteins
  - C) Formation of disulfide bonds
  - D) Proteolytic cleavage
  
4. Which of the following description is character of bacterial plasmids? (multiple choice) (5%)
  - A) useful cloning vectors
  - B) DNA molecules that are linear
  - C) Self-replicating, extrachromosomal DNA molecules
  - D) Closed circular in structure
  - E) They have all of the bacterial genetic information
  
5. Please describe the structure and function of nucleus in a mammalian cell. (10%)
  
6. Please compare the difference between DNA and RNA in the primary, secondary, and tertiary structure.(5%)

(背面仍有題目,請繼續作答)

7. Please write down the transcribed mRNA sequence of the following DNA fragment and also indicate the 5' and 3' position in your answer. (5%)

5' AGCTTACGTCCTAGATGC 3'

8. Please describe the following terms: (10%)

- A) Okazaki fragment;
- B) Gel electrophoresis mobility assay;
- C) Southern blotting
- D) Northern blotting

9. Please describe the meaning of the following terms:(10%)

- A) Lethal mutation
- B) Silent mutation
- C) Spontaneous mutation
- D) Induced mutation

10. How to define a gene that is constitutive or inducible? Give an example. (10%)

11. Please write down an experiment that demonstrated DNA replication is semiconservative. (10%)

12. If a cell is stimulated by epidermal growth factor (EGF), it will proliferate into two cells. As a student you are, how are you going to clone gene(s) that is induced by EGF? (20%)