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）　　考試日期：0302，節次：1

單選題 (Simple Choice Questions)： 共 25 題，每題 2 分

※ 請勿在本試題紙上作答，否則不予計分。

1. The Uvr system in *E. coli* makes incisions ~_____ bases apart on both sides of damaged DNA, removes the DNA, and resynthesizes new DNA.
(A) 10
(B) 12
(C) 15
(D) 18

2. Yeast *Ty* elememts resemble _____.
(A) retroviruses
(B) transposons
(C) enhancers
(D) clusters

3. The P elements are _____ that are carried in P strains of *Drosophila melanogaster*, but not in M strains.
(A) enhancers
(B) promoters
(C) retroposons
(D) transposons

4. Null mutations, or other mutations that impede gene function (but do not necessarily abolish it entirely), are called _____ mutations.
(A) gain-of-function
(B) loss-of-function
(C) silent-of-function
(D) increasing-of-function

5. Which residue in the 55 kD Ad-binding protein is covalently linked to adenovirus DNA?
(A) Met
(B) Arg
(C) Thr
(D) Ser

6. Some sites gain far more than the number of mutations expected from a random distribution are called _____.
(A) hotdogs
(B) hotspots
(C) hotpoints
(D) hotsites

（背面仍有題目，請繼續作答）

7. The heavy chains are assembled _____ recombinations.
(A) four
(B) three
(C) two
(D) one

8. What type of heavy chain contains in IgG?
(A) α
(B) ε
(C) γ
(D) δ

9. The MARs (matrix attachment regions) are _____-rich but do not have any specific consensus sequence.
(A) A-T
(B) A-G
(C) G-C
(D) C-T

10. A typical telomere has a simple repeating structure with a _____-rich strand that extends beyond the C-A-rich strand.
(A) A-T
(B) A-G
(C) G-T
(D) T-G

11. >_____% of the DNA is recovered in nucleosomes or multimers when micococcal nuclease DNA of chromatin.
(A) 95
(B) 90
(C) 85
(D) 80

12. What type modification not finds in histone?
(A) glycosylation
(B) phosphorylation
(C) acetylation
(D) methylation

13. Which of the following positions were not the components, consisting of consensus sequences of prokaryotic promoters?
(A) +1
(B) -10
(C) -35
(D) -50

14. Which of the following descriptions of the major difference between transcription in prokaryotes and eukaryotes is not true?
(A) In prokaryotes, RNA polymerase bind to the promoter by directly recognizing short consensus sequences in the vicinity of the start point.
(B) In prokaryotes, in some cases, an ancillary factor is required to assist or to stabilize to binding of RNA polymerase.
(C) In eukaryotes, the RNA polymerase binds the promoter by directly recognizing a series of short consensus sequences that line in the region upstream of the start point.
(D) In eukaryotes, the transcription factors are needed for initiation, but are not required subsequently.

15. Which of the following consensus sequences was palindrome?
(A) 5'-ATTCG....ATTCG-3'
(B) 5'-ATTCG....CGAAT-3'
(C) 5'-ATTCG....GCTTA-3'
(D) 5-ATTCG....TAAGC-3'

16. Which of the following descriptions of the regulating eukaryotic transcription is not true?
(A) Eukaryotic gene expression is usually controlled at the level of termination of transcription.
(B) The basal apparatus determines the startpoint for transcription.
(C) Activators work by making protein-protein contacts with the basal factors.
(D) Activator may work via coqactivators.

17. Which of the following sequences is not the regular splice site?
(A) GU.......AG
(B) GC.......AG
(C) AU.......AG
(D) AU.......AC

（背面仍有題目,請繼續作答）

18. How many molecules of mRNA per cell in *E. coli* ?

(A) 15

(B) 150

(C) 1500

(D) 15000

19. Which of the following descriptions of the protein synthesis is not true?

(A) The ribosome has three tRNA-binding sites.

(B) An aminoacyl-tRNA enters the A site.

(C) Peptidyl-tRNA is bound in the P site.

(D) Deacylated tRNA exits via the D site.

20. Which of the followings is not stop code?

(A) UGA

(B) UAC

(C) UAA

(D) UAG

21. Which of the following description of protein localization is not true?

(A) Proteins that are imported into cytoplasmic organelles are synthesized on free ribosomes in the cytosol.

(B) Proteins that are imported into the ER-Golgi system synthesized on ribosomes that are associated with the ER.

(C) Phroteins associate with membranes by means of specific amino acid sequences called signal sequences; it was often located at the C-terminus of the protein.

(D) The signal sequences are usually cleaved off the protein during the insertion process.

22. Which of the following description of the *lac* gene repressor is not true?

(A) An inducer functions by converting the repressor protein into an active form.

(B) Repressor protein has two binding sites, one for the operator and another for the inducer.

(C) Repressor is a tetramer made of two dimmers.

(D) The DNA-binding domain of repressor contains two short α-helical regions that bind the major groove of DNA.

23. Which of the following RNA polymerase subunits is only found in RNA polymerase II?
(A) subunit α
(B) subunit β
(C) subunit β'
(D) CTD (carboxy-terminal domain)

24. Which of the following description of CpG islands is not true?
(A) A CpG island is a stretch of 1-2 kb in a mammalian genome that is rich in unmethylated CpG doublets.
(B) There are ~29,000 CpG islands in the human genome.
(C) CpG islands surround the promoters of some genes where they are unmethylated.
(D) Methylation of a CpG island will active of a promoter within it.

25. DNA damage triggers a checkpoint that block the cell cycle until the damage has been repaired. There are some groups of proteins involved in this function. Which of the following is not true?
(A) Rescuer proteins
(B) Transducer proteins
(C) Effector proteins
(D) Sensor proteins

簡答題 (Short Essay):共 10 題，每題 5 分

1. What is complementation test?

2. What is semiconservative repilcation?

3. What are called viroids?

4. What are the two major functions of telomere ?

5. What are called insulators?

6. What is negative control and what is positive control? Explain and give a brief example.

7. Please explain how do proteins insert into membranes?

8. Please explain what "somatic cell cycle" is and what is the control point in the cycle progression?

9. Please describe why growth factor receptor kinase could be mutated to oncogenes?

10. Please explain what is RNA editing? And give a brief example.