

Chapter 2 SELF-TEST Biological background

This is a quick test to check that you have remembered some of the fundamental biological material in this Chapter.

1. Which of the following are pyrimidines?
 - A. Adenine and thymine
 - B. Cytosine and thymine
 - C. Cysteine and guanine
 - D. Cytosine and guanine
2. Which of the following contain phosphorous atoms?
 - A. Proteins, DNA and RNA
 - B. DNA and RNA
 - C. DNA only
 - D. Proteins only
3. Which of the following contain sulphur atoms?
 - A. Histidine
 - B. Lysine
 - C. Methionine
 - D. All of the above
4. Which of the following is not a valid amino acid sequence?
 - A. EINSTEIN
 - B. CRICK
 - C. FARADAY
 - D. WATSON

5. Which of the following 'one-letter' amino acid sequences corresponds to the sequence Tyr-Phe-Lys-Thr-Glu-Gly ?

- A. YFKTEG
- B. WPKTEG
- C. WFLTGY
- D. YFLTDG

6. Which of the following peptides would have the largest positive charge in a solution at neutral pH?

- A. LYAIRT
- B. CTKPLH
- C. VEMDAS
- D. PHRYLD

7. Consider the following DNA oligomers. Which two are complementary to one another? All are written in the 5' to 3' direction.

(i) TTAGGC (ii) CGGATT (iii) AATCCG (iv) CCGAAT

- A. (i) and (ii)
- B. (ii) and (iii)
- C. (i) and (iii)
- D. (ii) and (iv)

8. Which of the following statements about transcription is correct?

- A. Transcription is initiated at a start codon.
- B. Transcription is carried out by aminoacyl-tRNA synthetases.
- C. RNA sequences must be spliced prior to transcription.
- D. Transcription involves the complementary pairing of a DNA strand and an RNA strand.

9. Which of the following components of a cell does not contain RNA?

- A. The nucleus
- B. The ribosome
- C. The spliceosome
- D. The cell membrane

10. Which of the following statements about ribosomes is correct?

- A. During translation, a ribosome binds to a messenger RNA near its 5' end.
- B. Ribosomes are essential for DNA replication.
- C. Ribosomes can be synthesized by *in vitro* selection techniques.
- D. Inside a ribosome there is one tRNA for each type of amino acid.

11. Which of the following statements about the genetic code is correct?

- A. Cysteine and tryptophan have only one codon in the standard genetic code.
- B. Serine and arginine both have 6 codons in the standard genetic code.
- C. The fMet tRNA is a special tRNA that binds to the UGA stop codon.
- D. All of the above.

12. Which of the following statements about polymerases is correct?

- A. RNA polymerase has a much lower error rate than DNA polymerase due to proof-reading.
- B. DNA polymerases move along an existing DNA strand in the 5' to 3' direction.
- C. DNA polymerase I makes a primer onto which further nucleotides are added by DNA polymerase III.
- D. None of the above.