

1 hour

February Test

2002

THIS EXAMINATION CONSISTS OF 6 PAGES AND 26 QUESTIONS. YOU ARE RESPONSIBLE FOR ENSURING THAT YOUR COPY OF THE PAPER IS COMPLETE. BRING ANY DISCREPANCY TO THE ATTENTION OF THE INVIGILATOR.

YOUR PAPER WILL BE MARKED BY OPTICAL SCANNING. IT IS YOUR RESPONSIBILITY TO ENSURE THAT OMR EXAMINATION SHEET IS PROPERLY COMPLETED. YOUR EXAMINATION RESULT DEPENDS UPON PROPER ATTENTION TO THE FOLLOWING INSTRUCTIONS.

- ◆ Print your name, student number, course name, section number (1), and the date in the space provided at the top of side 1 of the form. Then the sheet MUST be signed in the space marked SIGNATURE.
- ◆ Mark your student number in the space provided on the sheet on side 1 and fill in the corresponding circles underneath.
- ◆ Mark only ONE choice from the alternatives (a,b,c,d) provided for each question. The question number is to the left of the circles. Make sure that the number of question on the scan sheet is the same as the question number on the test paper.
- ◆ Pay particular attention to the Marking Directions on the form.
- ◆ Begin answering questions using the first set of circles, marked "1".
- ◆ Each question is worth one mark for a correct answer and a zero marks for an incorrect answer. An unmarked question is considered an incorrect answer.

Questions

1. Water molecules interact with proteins via:

- a. Hydrogen bonds
- b. Dipole-dipole forces
- c. van der Waals
- d. All of the above

2. Which of the following amino acid has an ionizable side chain?

- a. Leucine
- b. Histidine
- c. Proline
- d. None of the above

3. X. Tripeptide Ala-Lys-Gly has three ionisable groups

Y. A linear tetrapeptide has three peptide bonds

a. Only X is correct

c. Both X and Y are correct

b. Only Y is correct

d. Neither X or Y are correct

4. Most Enzymes are:

a. Carbohydrates

b. Lipids

c. Proteins

d. Nucleic Acids

5. Which is NOT true about enzymes:

a. Enzymes are biocatalysts

b. Enzymes are highly specific

c. Compete with the coenzymes for binding

d. Degrade in transition state energy

6. Heavy metals are toxic because they:

a. Replace metal ion cofactors

b. Increase the temperature in the cell

c. Compete with coenzymes for binding

d. Degrade the transition state energy

7. Which one of the following is a polar amino acid

a. Alanine

b. Leucine

c. Lysine

d. Valine

8. X. A water molecule can be a donor of two H-bonds

Y. A water molecule can be an acceptor of two H-bonds

a. Only X is correct

c. Both X and Y are correct

b. Only Y is correct

d. Neither X or Y are correct

9. Which is not true about hydrophobic residues?

a. They interact with other hydrophobic residues within the protein

b. They interact with other hydrophobic residues on other proteins

c. They usually reside in the interior of a protein

d. They interact preferentially with water molecules

10. X. Glycogen is branched polysaccharides
Y. Myoglobin is a branched polypeptide

- a. Only X is correct
- b. Only Y is correct
- c. Both X and Y are correct
- d. Neither X or Y are correct

11. The structural formula below represents

- a. Tyrosine
- b. Tryptophan
- c. Histidine
- d. Phenylalanine

12. X. A polypeptide chain growing in a ribosome is attached to an aminoacyl-tRNA
Y. During protein synthesis, the ribosome moves from the 5' end to the 3' end of mRNA

- a. Only X is correct
- b. Only Y is correct
- c. Both X and Y are correct
- d. Neither X or Y are correct

13. X. Anomers of fructose interconvert in solution
Y. Anomeric carbon of D-ribose is a chiral centre

- a. Only X is correct
- b. Only Y is correct
- c. Both X and Y are correct
- d. Neither X or Y are correct

14. X. Triacylglycerols are components of biological membranes
Y. Linoleic acid has completely saturated side chain

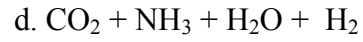
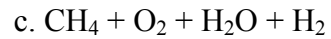
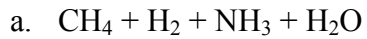
- a. Only X is correct
- b. Only Y is correct
- c. Both X and Y are correct
- d. Neither X or Y are correct

15. X. Integral membrane proteins may have ionizable amino acid residues
Y. Peripheral membrane proteins may have ionisable amino acid residues

- a. Only X is correct
- b. Only Y is correct
- c. Both X and Y are correct
- d. Neither X or Y are correct

16. X. Amylopectin is a branched polysaccharide
Y. α -Amylose is a linear polysaccharide
- a. Only X is correct
b. Only Y is correct
c. Both X and Y are correct
d. Neither X or Y are correct
17. X. Action potential propagates from the body of neuron dendrites
Y. Intracellular concentration of Na^+ is higher than its extracellular concentration
- a. Only X is correct
b. Only Y is correct
c. Both X and Y are correct
d. Neither X or Y are correct
18. X. Tryptophan is a standard amino acid
Y. Acetylcholine is a neurotransmitter
- a. Only X is correct
b. Only Y is correct
c. Both X and Y are correct
d. Neither X or Y are correct
19. X. Ions move through ion channels against their electrochemical gradient
Y. Na^+/K^+ pump consumes energy
- a. Only X is correct
b. Only Y is correct
c. Both X and Y are correct
d. Neither X or Y are correct
20. X. The active site of lysozyme includes two acidic residues
Y. The substrate conformation changes upon binding to lysozyme
- a. Only X is correct
b. Only Y is correct
c. Both X and Y are correct
d. Neither X or Y are correct
21. The true criterion of spontaneity of a chemical process is
- a.
22. X. Chymotrypsin is a serine protease specific for aromatic residues
Y. Sickle-cell anemia is caused by mutation in hemoglobin
- a. Only X is correct
b. Only Y is correct
c. Both X and Y are correct
d. Neither X or Y are correct

23. In the experiments by Miller and Urey [1953], the following mixture was used as a model of the primordial atmosphere



24. X. In the triple-helical structure of collagen, H-bonds are formed between the helices
Y. Hemoglobin contains alpha-helices

a. Only X is correct

c. Both X and Y are correct

b. Only Y is correct

d. Neither X or Y are correct