

## DENATURING PROTEINS – TOPIC TEST 1

### QUESTION 1

Denaturation disrupts

- A the primary structure
- B the secondary structure
- C the tertiary structure
- D B and C

### QUESTION 2

An example of denaturation is

- A the setting of gelatine
- B cooking an egg
- C the curdling of milk
- D all of the above

### QUESTION 3

Denaturation of a protein can be caused by

- A slight changes in pH
- B temperature changes
- C adding hot concentrated acid
- D all of the above

### QUESTION 4

Which of the following statements is not true?

- A denaturation causes the hydrolysis of the amide links in a protein
- B denaturation disrupts the secondary structure of the protein
- C denaturation disrupts the tertiary structure of a protein
- D denaturation can cause a protein to lose its biological activity

### QUESTION 5

Which of the following statements is not true?

- A the breaking of covalent bonds cannot occur during denaturation
- B the primary structure will not be disrupted during denaturation
- C when a protein is denatured, the protein will lose all its regular repeating structures (like pleated sheets)
- D denaturation is often followed by the formation of disulfide bridges which causes the protein to clump together

### QUESTION 6

Explain why a protein loses its biological activity once it is denatured.

**Solution**

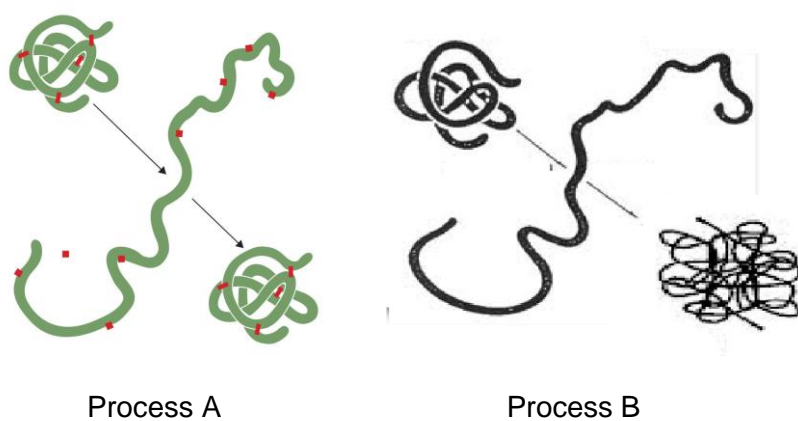
### QUESTION 7

Why does denaturation only affect the secondary and tertiary structures of a protein and not the primary structure?

**Solution**

### QUESTION 8

Explain the differences between the two processes shown below.



**Solution**

## SOLUTIONS

**QUESTION 1** Answer is D

**QUESTION 2** Answer is D

**QUESTION 3** Answer is D

**QUESTION 4** Answer is A

**QUESTION 5** Answer is A

### **QUESTION 6**

For a protein to be biologically active, it must maintain a particular shape at the active site. Denaturation causes changes to the shape at the active site meaning that the substrate can no longer bond, fit into it or bond with it. This means that the reaction can no longer be catalysed and the protein has become biologically inactive.

### **QUESTION 7**

It is difficult to break apart the covalent bonds that are holding the primary structure together and typically, there is not enough energy to do this during denaturation. However, there is sufficient energy to break apart the weaker attractions that maintain the secondary and tertiary structures.

### **QUESTION 8**

Process A shows denaturation followed by renaturation.  
Process B shows denaturation followed by coagulation.