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BIOLOGY

FOUNDATIONS IN BIOLOGY

Level & Board	OCR (A-LEVEL)
TOPIC:	BIOLOGICAL MOLECULES - PROTEINS
PAPER TYPE:	SOLUTION - 2
TOTAL QUESTIONS	06
TOTAL MARKS	/30

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Biological Molecules – Proteins - 2

1.

(a) 2.8 kPa

(b) llama hemoglobin needs higher affinity for oxygen

So can pick up oxygen at lower partial pressure of oxygen

2.

(a)

Insoluble

Strong / AW

Unreactive / AW

3.

(a)

Secondary

Quaternary

Primary

Tertiary

(b)

Other foods have same / similar antigen

Idea that the antigen is a short sequence of amino acids so may be common to more than one polypeptide

Variable region / binding site of antibody is not specific to gliadin antigens

Antibody binds to T lymphocyte / mast cell

Mast cell releases histamine causes inflammation

4.

(a)

Gene / DNA copied / transcribed to mRNA

Idea that RNA goes to / translation is at ribosomes /RER

DNA is too large to / cannot / is not able to leave nucleus / cross nuclear envelope / fit through nuclear pores

(b) 90 252

(c) Proteins are informally classified into three primary groups – Fibrous proteins, globular proteins and membrane proteins. All these groups correlate with the associated tertiary structures. In this article, we shall explore the differences between globular proteins and fibrous proteins.

Difference Between Fibrous Protein and Globular Protein

Fibrous Protein	Globular Protein
Purpose of Proteins	
Structural – which means these proteins helps to maintain cell shape by providing a scaffolding	Functional – this means globular proteins carry out a specific biological function in the body
Examples	
Keratin, collagen, elastin, fibrin	Haemoglobin, myoglobin, insulin, enzymes
Shape of Proteins	
Usually long and narrow	Typically spherical in shape
Sequence of Acid	
Amino acid sequence is repetitive in nature	Amino acid sequence is irregular
Resilience	

Less sensitive to factors such as changes in temperature and pH	More sensitive to temperature and pH
Solubility	
Typically insoluble in water	Typically soluble in water

5.**(a)**

9300 / 9700

Death's year⁻¹ or deaths per year or deaths / year**(b)**

Decrease in new diagnoses from 1992 / already / began before 1995

Peak / plateau in deaths from 1994 / already / began before 1995

No change in / same rate of increase in people living with AIDS before / after 1995

6.**(a)****It:**

Is long chain of amino acids

Little / no tertiary structure

Insoluble / has many non-polar amino acids

Has only two different amino acids / only glycine and proline / a small range of amino acids

Has a structural function / provides strength to the artery wall

(b)

Many hydrogen bonds between polypeptides

Many covalent bonds / crosslinks between collagen molecules

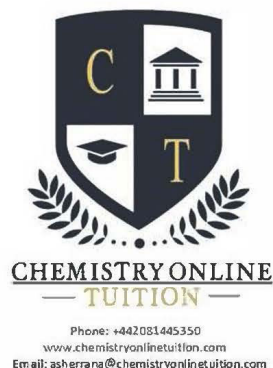
Polypeptides overlap / polypeptides have staggered ends



I am Sorry !!!!!



DR. ASHAR RANA



- Founder & CEO of Chemistry Online Tuition Ltd.
- Tutoring students in UK and worldwide since 2008
- Chemistry, Physics, and Math's Tutor

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