

Markscheme

1

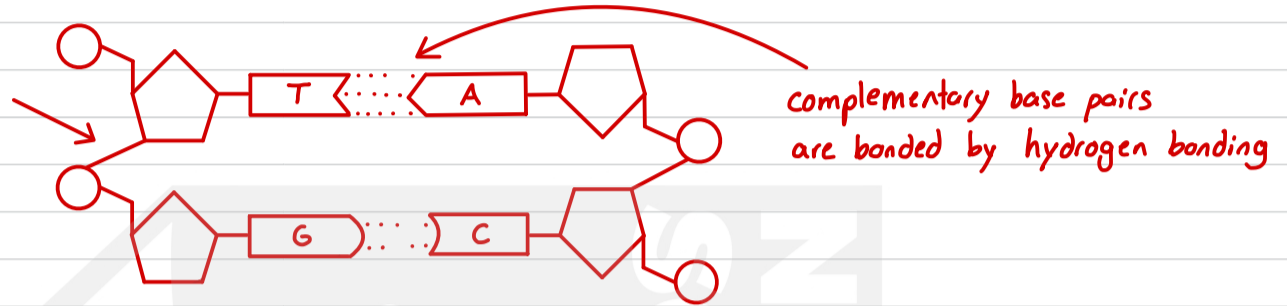
Biomolecule	elements present	monomer	polymer	animal food source	plant food source
Proteins	C, H, O, N (S sometimes)	amino acid	polypeptide	meat, eggs	tofu, edamame, nuts
Lipids	C, H, O	glycerol + fatty acid	triglyceride	meat, milk	olive oil, canola oil, etc.
Carbohydrates	C, H, O	monosaccharide	polysaccharide	milk	wheat, corn, fruits, etc.
Nucleic acids	C, H, O, N, P	nucleotides	polynucleotide / DNA	all meats	all plants (strawberries)

2

15% A - since A must pair with T, 15% T A+T = 30% C+G = 100-30 C must pair with G so, = 60% 60% ÷ 2 = 30% ∴ 30% Cytosine

3

Nucleotides bind to each other covalently (Phosphate to deoxyribose)



4

many potential answers. Example: platinum. Found in catalytic converters in cars which catalyzes conversion of CO into CO₂



5

many potential answers. Here are some:

Biomolecule	anabolic enzyme ^{more difficult to find}			catabolic enzyme		
	enzyme name	substrate	product	enzyme name	substrate	product
Carbohydrate	glycogen synthase	glucose + glycogen chain	longer glycogen	lactase	lactose	galactose + glucose
lipid	DGAT ₁	glycerol + fatty acids	triglyceride	lipase	triglyceride	glycerol + (3) fatty acids
protein	peptidyl transferase	amino acids	polypeptide	protease	polypeptide	shorter peptides / amino acids
nucleic acid	DNA polymerase	DNA + nucleotide	longer DNA	restriction endonuclease	DNA	two shorter DNA fragments

6

Humans maintain a constant internal body temperature of ~37°C.

A main reason for this is that most enzymes we use, this is their optimal temperature.

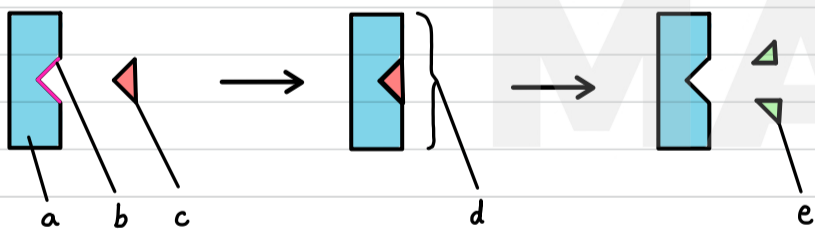
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If humans have a prolonged fever (too high body temp) enzymes can start to denature. As nearly all chemical processes in our body rely on enzymes, if enzymes stop functioning, we can no longer perform life-necessary processes (ex: respiration, digestion, growth, etc.) we die.

8

An enzyme's active site has a very specific shape, ∴ it can only catalyze a reaction where it can bind to substrate with a complementary structure.

9



- a enzyme
- b active site
- c substrate
- d enzyme-substrate complex
- e product