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BIOLOGY

FOUNDATIONS IN BIOLOGY

Level & Board	OCR (A-LEVEL)
TOPIC:	NUCLEOTIDES AND NUCLEIC ACIDS
PAPER TYPE:	QUESTION PAPER - 2
TOTAL QUESTIONS	07
TOTAL MARKS	/30

Nucleotides and Nucleic Acids - 2

1.

(a) The sperm chromosomes are composed of DNA. There are four words missing from the following section regarding nucleic acids. Fill in the blanks with the appropriate words from the list below to finish the passage. **(4)**

pentose	nucleus	adenosine	hydrolysis	
spiral	polymers	nucleotide	fibres	hexose
phosphate	strands	base	two	

The building blocks of nucleic acids are..... monomers. The monomers create phosphodiester linkages with each other. The "backbone" of the molecule is made up of a..... group that sits between the..... molecules. Hydrogen bonding between the two antiparallel..... results in the distinctive double helix structure of DNA.

2.

One biological molecule that differs amongst people is DNA. Certain DNA segments code for proteins. A portion of a DNA molecule's structure is depicted in Fig. 16.1.

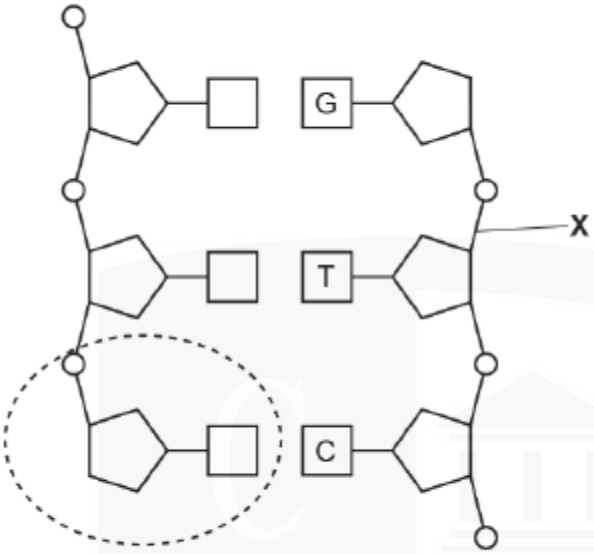

Fig. 16.1

(a) One nucleotide is displayed in the circled area. Identify the parts of this nucleotide. **(3)**

(b) Give the name of the connection that the letter X represents, along with the kind of reaction that created it. **(2)**

3.

A DNA nucleotide is shown in Fig. 24.

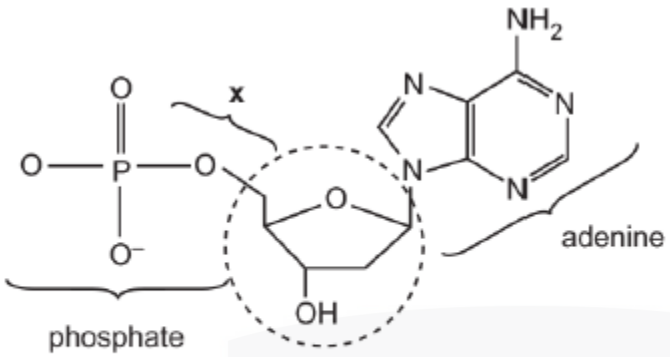

Fig. 24

(a) Name two parallels and two divergences between an ATP molecule and the DNA nucleotide depicted in Figure 24. **(4)**

4.

Perhaps the most significant molecule in all of biology is DNA. DNA replication is the mechanism by which a cell creates an identical copy of its DNA during cell division.

(a) Describe how identical copies of DNA can be created by the pairing of nitrogenous nucleotides. **(3)**

I am Sorry !!!!!

5.

ADP is shown as a molecule in Fig. 21.

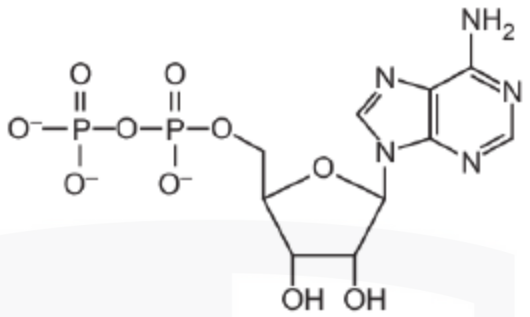

Fig. 21

(a) Draw a circle around the purine-containing region of the ADP molecule on Fig. 21. **(2)**

I am Sorry !!!!

(b) Name two distinctions between an adenine-containing DNA nucleotide and an ADP molecule. **(2)**

(c) To create ATP, an inorganic phosphate (Pi) and ADP link together. Give the name of this kind of response. **(2)**

I am Sorry !!!!!

6.

There are four nucleotides in Fig. 22.

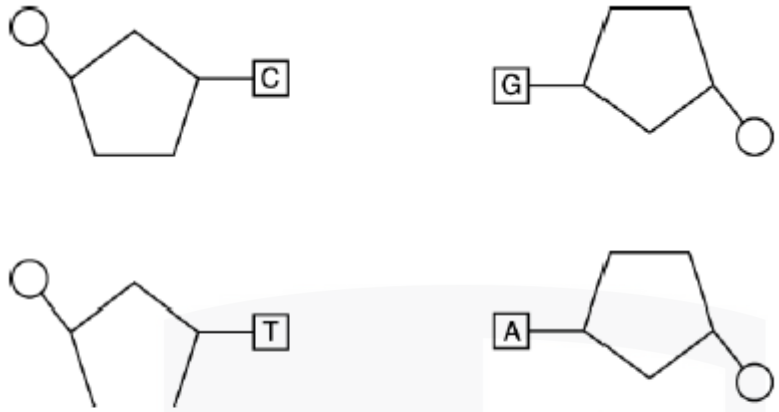

Fig. 22

(a) Draw and name the bonds that link the nucleotides of a DNA molecule together on Fig. 22. **(2)**

7.

Figure 16.1 depicts the ATP structure.

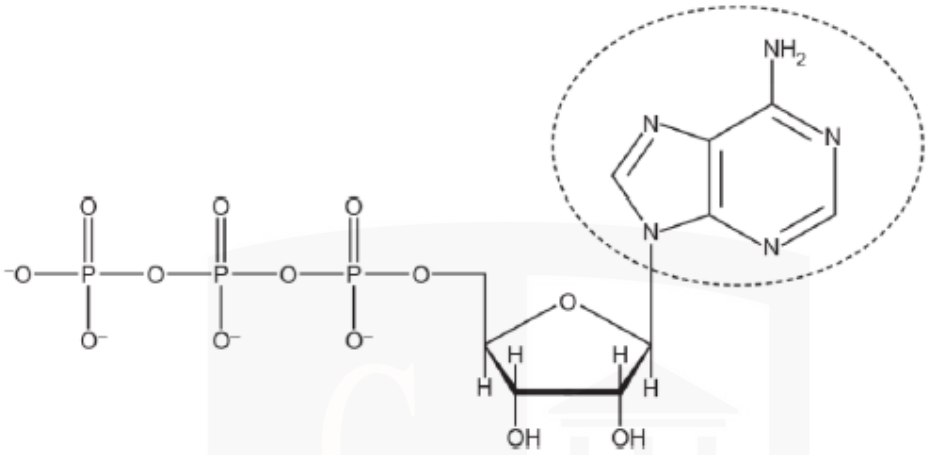

Fig. 16.1

(a) Identify the part of Fig. 16.1 that is circled. **(2)**

(b) Identify the kind of reaction that takes place when ATP is changed into ADP. **(2)**

(c) A teacher once informed his class that the human body produces ATP every day, which is equal to its own mass. Describe why, at the end of the day, ATP made up such a little percentage of the pupils' mass. **(2)**

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