

Name:

Number:

Score: _____ / 50

Science English

Semester Final 2022

You can do it!

YOU

THE TEST

D A

Name:

Number:

Biology Section [32 points]

DNA QUESTIONS

Question 0 Check that your name and number are on top of each page. Thanks! |

Question 1 There are two factors that make us all different; inherited information from our parents and the environment we live in. From the list of traits below, determine which traits are **Inherited**, **Environment**, or **Both**, and write them in the correct box. [6 points]

List of Traits: eye color skin color height
 muscle mass blood type scars
 hair color tattoos disease

Inherited	Environment	Both
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Write one example of a trait for each category that is not on the list above.

Inherited: _____

Environment: _____

Both: _____

Name:

Number:

Biology Section

Page 2

Question 2 Fill in the blanks in the following sentences from the list of words below.
[2.5 points]

structural enzyme collagen chromosomes functional chemical genes

- a. The information that you inherit from your parents is contained in _____ .
Each one of these is a small section of your DNA.
- b. _____ proteins build the body. An example of this protein is _____.
- c. _____ proteins take part in chemical reactions in the body. An example of this protein is a(n) _____.

Question 3 Are you hungry? Me too! Please fill in the blanks or circle the correct choice so you can know about my favorite food—DNA Spaghetti! YUMMY! Do you know it?

[5 points]

The full name for DNA Spaghetti is (**Damaxyriboncleic Acid / Deoxyribonucleic Acid / Dominospizza Acid**) Spaghetti. It is made with delicious (**strands / proteins / cells**) of DNA. To make Spaghetti DNA, we need to first extract the DNA. Inside every healthy _____ in the human body, there is an organelle (細胞小器官) at its center called the _____. This is where the DNA can be found. The DNA itself is wound into tightly coiled structures called (**chromosomes / melon pan / genes**) so we need to unwind it first. The DNA is super long, with each strand being about three (**light years / meters / namometers**) long. You can make a lot of spaghetti with it!

[Question 3 continues on the next page]

Name:

Number:

Biology Section

When you cut the DNA with your kitchen knife, so you can boil it in a pot, make sure your knife is very sharp. The sides of the DNA helix (its backbone) are made of a strong (**plasticized / gene / sugar**) – phosphate chain, so your knife needs to be sharp to cut it. So, what makes DNA Spaghetti so delicious? It is the (**two / one / π / four**) types of base pairs inside the DNA which are made of a total of ([2] / [2 + 2] / [2 + 2 + 2]) unique nucleobases that are held together by (**nitrogen bonding / hydrogen bonding / nuclear fusion / the power of friendship**). DNA Spaghetti is my favorite food and I hope you enjoy it. It's DNAmazing!

Question 4 A student is taking a biology test. One question asks him to match the other half of a DNA strand by writing in the correct matching nucleobases and to also write the correct number of hydrogen bonds between them. Below are his answers.

DNA from test question	{	A	C	G	C	T	T	A	G	A
		2	2	3	3	2	2	2	3	T
student's answers	{	T	G	C	C	A	C	T	A	G

Sadly, the student made several mistakes. Please put a circle around each of his mistakes in his answer above. (For each nucleobase pair above, circle the number of hydrogen bonds, the nucleobase, or both, **if** they are wrong.) **[5 points]**

What do **A**, **G**, **T**, and **C** stand for?

A: _____

G: _____

C: _____

T: _____

Name:

Number:

Biology Section

BANANA QUESTIONS

You are hungry for science! You go to the kitchen and grab a banana (**z**). You want to look at the DNA inside it. (Please use complete sentences when you write your answers!)

Question z First, you need to make a liquid solution for the banana. You need water, liquid detergent, and one other material. Circle the third material you need. **[2.5 points]**

- ethanol salt sugar two cats

What is the function of this third material in the experiment?

Question zz After making the solution, you peel a banana, cut it in half, and put half of it in your solution. What step did you **forget** to do **and** why is this step important? **[2 points]**

Question zzz Quickly, you correct your mistake and then you stir the banana solution gently. Why should you stir it gently? (Think about what happens if you stir soap quickly.) **[1 point]**

Group Research Project Section [18 points]

Please answer the following questions in **complete sentences, with proper grammar!**

Question 1 What is the title of your poster?

[1 point]

Question 2 What was the goal/purpose of this research?

[2 points]

Question 3 What was your hypothesis?

[2 points]

Name:

Number:

[Research Section]

Page 7

Question 4 What methods did you use to check your hypothesis?

[3 points]

Question 5 What was the conclusion of your research? Was your hypothesis accurate or not? If you did not have a conclusion, you can explain what problems you had during research.
[3 points]

Question 6 If you had to do a new research project based on your results, what would you research? What new question would you try to answer?
[3 points]

Name:

Number:

[Research Section]

Page 8

Question 7 If you had to redo the same research project, what would you do to improve the quality of your results? **[2 points]**

Question 8 I hope you all had some fun working on your posters and research. What part of the research did you enjoy the most? What part of the research was the most difficult for you? **[2 points]**

hDca;owoioak;DkarblDA

END OF **[Research**

Section]

END OF **Final**

