Name: **Number:** **Score: _____ / 50**

Science English

Semester Final 2021

Biology Section [30 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. For example, eye color would go in the **Inherited** box. **[3.5 points]**

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

Inherited	Environment	Both
eye color		

Name: **Number:**

Biology Section **Page 2**

Write one example of a trait for each category

Inherited: _____

Environment: _____

Both: _____

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

structural enzymes collagen chromosomes functional chemical genes

a. The information that you inherit form your parents in contained in _____ , which are sections of DNA.

b. _____ proteins build the body. An example of this protein is _____.

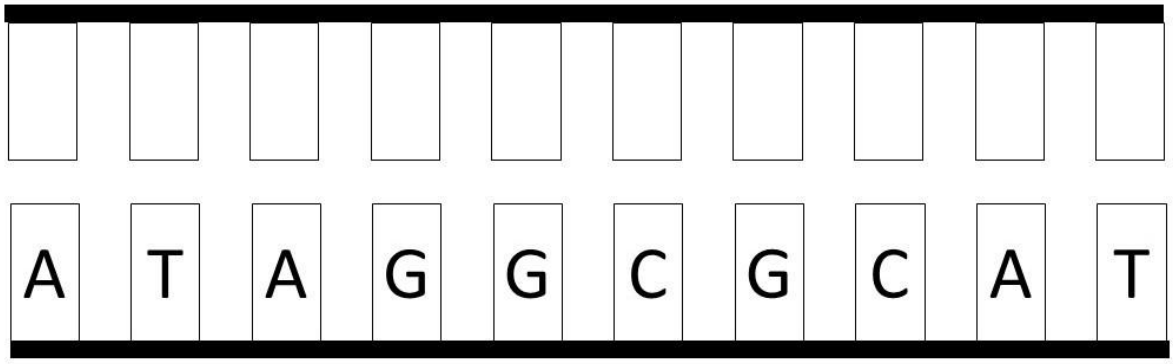
c. _____ proteins take part in chemical reactions in the body. An example of this protein is _____.

Question 3 Fill in the blanks **or** circle the correct choice to complete the paragraph about DNA and its structure. **[4.5 points]**

A single strand of **(enzyme / polymer / Deoxyribonucleic Acid)** can be very long, up to 3 meters in total! These strands are tightly coiled into _____ which are located inside of an organelle (細胞小器官) called the _____. Every healthy _____ in the human body has this organelle (細胞小器官). Each individual strand of DNA is shaped like a twisted ladder. This shape is called a **(double / triple / home run)** helix. The "backbone" of this ladder is made of a **(protein / sugar / plasticized)** –phosphate chain. The ladder is made of **(two / four / chocolate)** types of base pairs and these base pairs are made up of a total of **(two / four / vanilla)** unique nucleobases. Finally, these base pairs are formed with a certain type of bond. This bond is formed by **(nitrogen bonding / nuclear fusion / hydrogen bonding / the power of friendship).**

Name: **Number:**

Question 4 Oh no! Some of your DNA fell onto the floor and broke! You need to put it back together again. Fix your DNA by putting the correct letter **A**, **G**, **T**, or **C** in each of the ten boxes to make the correct base pairs. **[6 points]**



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

A: _____ G: _____

C: _____ T: _____

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?

_____

_____

_____

_____

Name: **Number:**

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 the 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? **[1 point]**

Question zzzz The liquid detergent is a surfactant, and its role is to help release the DNA from inside the cell. How exactly does it do this? (Think about why we use dish soap on pots and pans, and why we don't just use water to clean them.) **[2 points]**

Name: **Number:**

Biology Section

Question zzzzz After filtering your solution into a small test tube you gently pour ethanol into the test tube. Why do you use ethanol ***and*** what is the precipitate that forms in the ethanol layer? **[2 points]**

_____

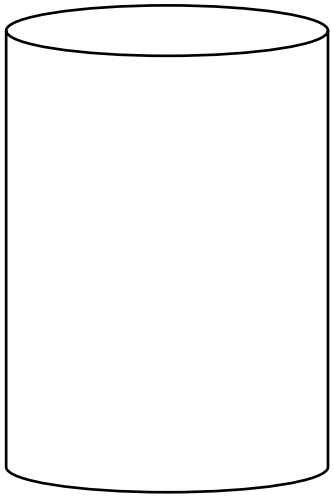
_____

_____

_____

_____

Question zzzzzz You are very happy with the experiment! After you are done, you take a picture of the test tube so you can post it to Instagram and show all your friends! Draw what the test tube looks like ***and*** label 3 things: the precipitate, the ethanol, and the filtrate (the filtered solution). **[4 points]**



zzzzzzzzzzzzzzzzzzzzz

END OF **Biology Section**

Group Research Project Section [20 points]

Please answer the following questions in **complete sentences**!

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]

Question 4 What methods did you use to verify 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]

Question 7 If you had to redo the same research project, what would you do to improve the quality of your results? **[3 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? **[3 points]**

_____

_____

_____

_____

_____

hDca;owoioak;DkarbldA

END OF **[Research Section]**

END OF **Final**