

Animal Problem Set

A fish lives in a saltwater environment. Indicate all the following possible water regulation methods that could be used by the fish?

- A. The fish secretes very concentrated salts.
- B. The fish has cells that actively transport ions outside cells
- C. The fish actively transport water into its cells
- D. The fish constantly drinks salt water.

Many different factors determine whether a living organism is larger or smaller. Indicate the correct statements below that explain why animals would decide to be larger or smaller.

- A. Larger organisms consume less energy per body mass.
- B. Smaller organisms have faster heart rates.
- C. Larger organisms consume less energy per body mass in transportation
- D. Smaller organisms have larger blood volume relative to size than larger organisms

Imagine that you are a Chinese immigrant and you have been eating purified rice (rice with the bran removed). You find that you feel tingling in your fingers, reduced coordination of your reflexes, pain, mental confusion, vomiting, and difficulty speaking. Which of the following vitamin deficiencies do you likely have?

- A. Thiamine
- B. Niacin
- C. Riboflavin
- D. Pantothenic acid

Recently, you have found that you are suffering from steatorrhea. Select all the possible causes of this disease.

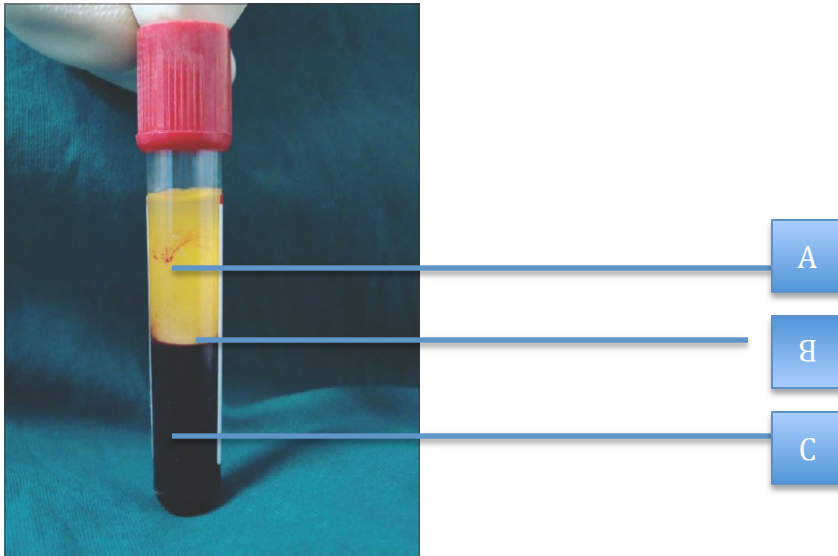
- A. You have a gallstone.
- B. Gastrin secreting cells in your stomach has been damaged.
- C. Cholecystokinin secreting cells have been damaged.
- D. Your liver cells have been severely damaged.

Plants fibers are often difficult to digest, and animals often employ the help of micro-organisms to help digest cellulose microfibrils. One particular successful digestion method is the four chambered stomach of ruminants. Indicate the all of the following statements about ruminants that are correct.

- A. Food that is initially eaten by the cow enters the rumen.
- B. In the omasum, prokaryotes and ciliates digest cellulose fibers to fatty acids.

- C. The abomasum leads to the small intestine of the cow.
- D. Cow often get most of their nutrition from digesting micro-organisms.

Consider the following centrifugation of blood. Select the following answers about the diagram.

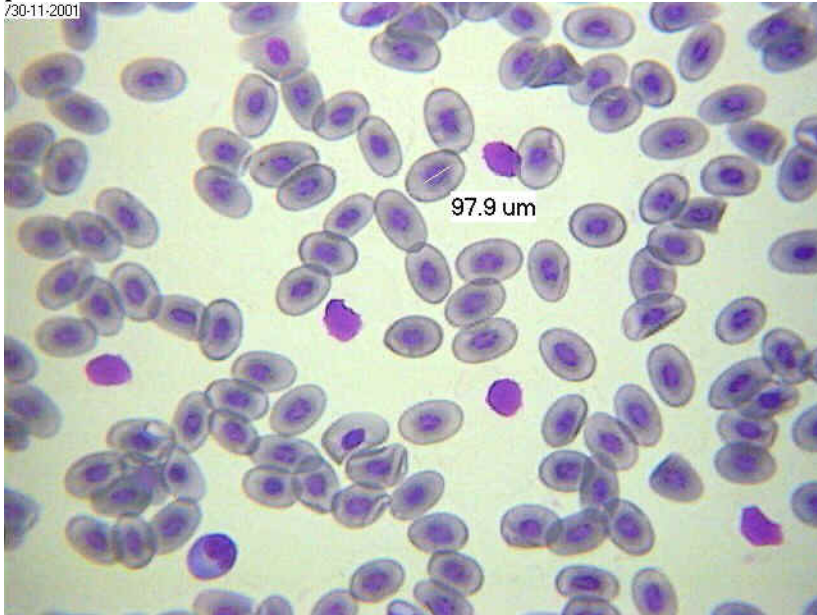


- A. Partition C increases in relative concentration after acclimatization in high altitude
- B. Partition C will be increased in concentration if the patient is suffering from a disease
- C. Erythropoietin will lead to an increase in concentration of partition C
- D. High levels of partition C can lead to increased risk of heart attack

Stephanie was recently playing tennis with Miles when she feel very violently and lost massive amounts of blood. Select all the following statements that are true.

- A. Reduced urine volume
- B. High levels of ADH
- C. High levels of aldosterone
- D. Vasoconstriction

You have always been a very clumsy person. One day, while you were preparing your slide, you accidentally forgot to label your slides and you do not remember which slide is what. Luckily, using your USABO skills you identify the following picture as.



- A. Frog eggs
- B. Frog blood smear
- C. Basophiles
- D. Insect eggs