

1.

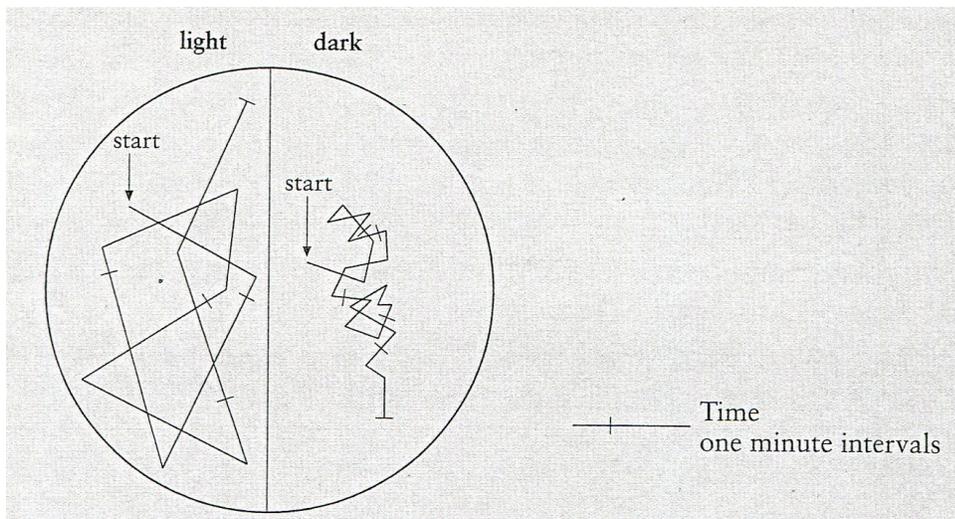
(a) Outline the function of thyroxine in human growth.

The control of thyroxine release involves the interaction between several endocrine glands and the hormones they produce

(b) Describe how the concentration of thyroxine is regulated

2.

A petri dish was divided in two. Half was illuminated and the other half kept in the dark. The drawing shows the path of a free-living aquatic flatworm plotted for five minutes in each condition.



(a) Describe two difference between the movement of the flatworm in the light and in the dark .

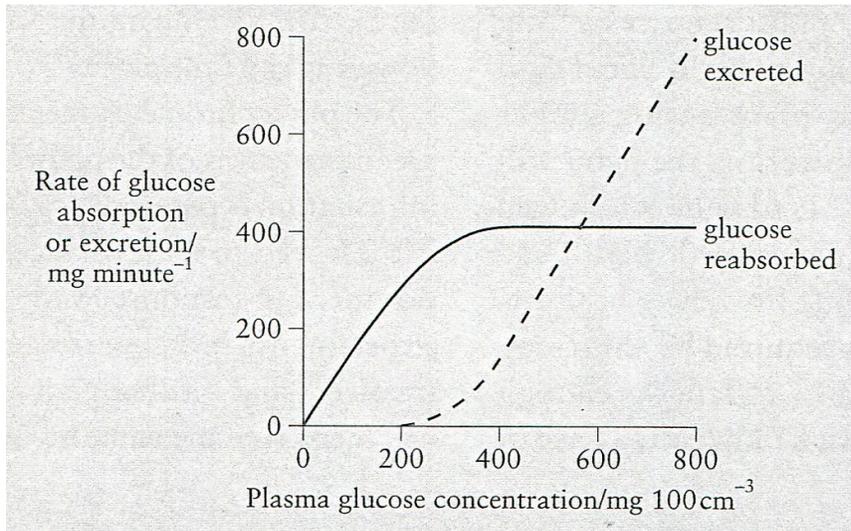
(b)

(i) What type of response is shown by the flatworm in this investigation?

(ii) Explain the importance of this response in the life of the flatworm

3.

The graph below shows the rate of glucose reabsorption in, and excretion from a mammalian kidney in relation to the glucose concentration in the plasma.



- In which part of the nephron is glucose reabsorbed?
- Explain the shape of the glucose reabsorption curve when the plasma glucose concentration is:
 - between 0 and 200 mg 100 cm⁻³
 - over 400 mg 100 cm⁻³
- Use the to explain why glucose may occur in the urine of diabetics.

4.

In an investigation to measure the size of a grasshopper population in a field, 30 grasshoppers were captured and marked with a small dot of paint before being released. The next day, 24 grasshoppers were captured using the same technique and of these, 6 were found to be marked with the paint dot.

- Suggest a suitable technique for capturing grasshoppers.
- Estimate the size of the grasshopper population in the field. Show your work.
- Give three assumptions which must be made when estimating population size using the capture and recapture method.

5.

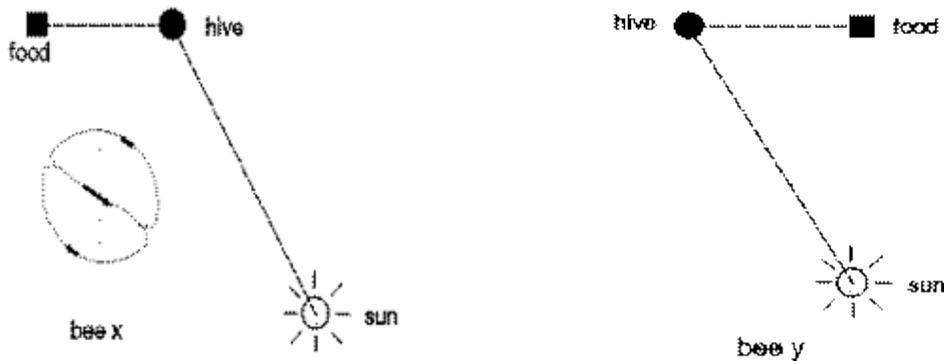
- (a) Explain the dangers that the use of chlorofluorocarbons and DDT has posed to living organisms and to the environment.
- (b) What steps are now being taken to minimize further damage to the environment by these chemicals?

6.

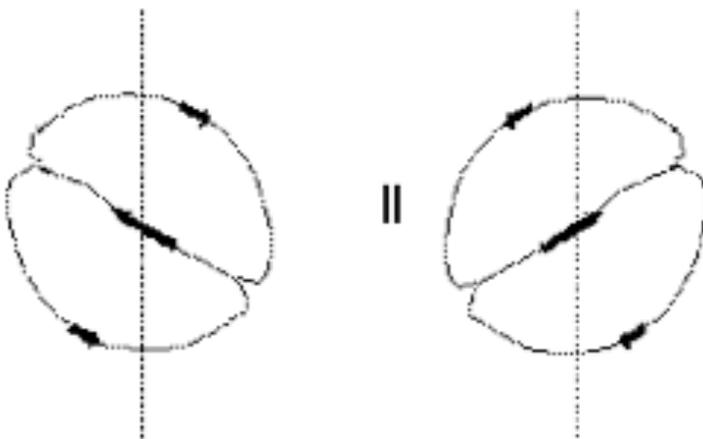
- (a) Describe how carbon is cycled within terrestrial (land-based) and within aquatic ecosystems.
- (b) Discuss the ways in which human activities may affect the balance of the carbon cycle, and so affect the environment

7.

A bee "X" has find a location with pollen supplies. His waggle dance in the hive is shown in the drawing. Another bee y also has find a location with food.



If dance I below represents the waggle dance of bee "Y", then use the information to predict and draw the position of the sun, hive and pollen (food) relative to each other as shown above if bee "Z" performed the dance labeled II. Provide reasoning.



I.

What type of behavior is depicted by a bee's waggle dance? Explain.