

Examzone: Topic 4 practice questions

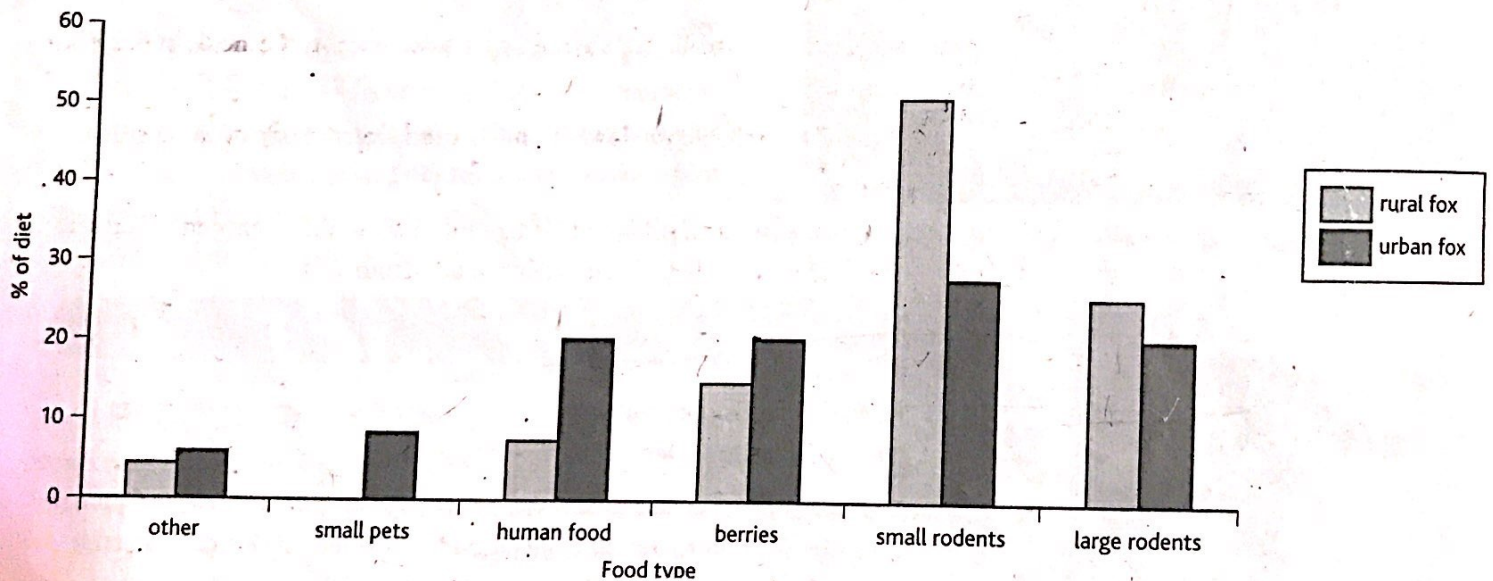
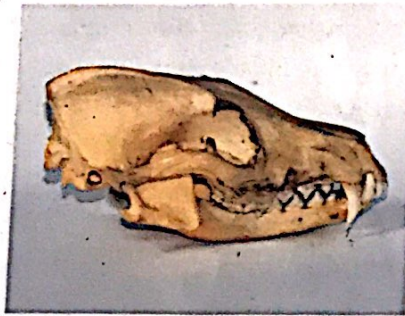
- 1 Read the following passage about the palisade cells of a leaf. Copy the passage, completing the spaces with the most appropriate word or words.

The palisade cell is typical of plant cells in that it has three structures,,, and, none of which is present in animal cells. In common with animal cells, plant cells (such as palisade cells) have membrane-bound organelles which are not present in cells. In a leaf, palisade cells are grouped together as a layer just below the epidermis forming a, the function of which is to carry out photosynthesis.

(Total 5 marks)

- 2 The fox (*Vulpes vulpes*) is a common mammal living in both rural (country) and urban (town) areas of the United Kingdom. Foxes eat a variety of foods including berries, rabbits, small birds and rodents such as rats and mice.

- a The photograph below shows the skull of the fox. Describe two features of the teeth of this fox that are an adaptation for feeding on small mammals. (2)
- b A number of studies have investigated the differences between the diets of rural foxes and foxes living in urban areas. The results of one study are shown below.



- i Compare the diet of the rural fox with the diet of the urban fox. (2)
- ii Human food was found to have a high content of carbohydrates and fats. Suggest how this could affect the time spent looking for food and the quantity of food eaten by the urban foxes. (2)
- c It has been suggested that the teeth of the urban fox are changing as their diet changes. Describe how the rural and urban foxes could evolve into separate species. (4)

(Total 10 marks)

- 3 Garlic is known to contain an antimicrobial substance called allicin.
- a Suggest an advantage to a plant in producing antimicrobial substances in its cells. (1)
 - b The presence of antimicrobial substances in garlic can be demonstrated by grinding garlic in ethanol to produce an extract. A sample of this extract is then applied to a small disc of filter paper.
 - i Describe how you would demonstrate that this disc contained an antimicrobial substance. (4)
 - ii A newly discovered rainforest plant is thought to contain a powerful antimicrobial substance. Explain how you would compare the effectiveness of this new substance with allicin in garlic. (3)
 - c Suggest how this newly discovered plant substance might have a useful application which does not involve genetic modification. (1)

(Total 9 marks)

- 4 Many plants are grown for their fibres for use in making cloth. For example, nettle fibres can be used for this purpose. In the future nettle fibres may be developed in the United Kingdom as an alternative to imported cotton plant fibres.

A student investigated the strength of plant fibres to find out if they could be made into cloth. The following method was used.

Step 1. Harvest nettle plants and remove leaves from stems

Step 2. Place stems in buckets and cover with water. Leave for ten days

Step 3. Remove stems and wash fibres under running water

- a Suggest and explain the changes that take place in the nettle stems during Step 2. (2)
- b Describe a reliable method for measuring the strength of these plant fibres. (4)
- c Suggest why, in the United Kingdom, cloth made from nettle fibres could be made more cheaply than cloth made from cotton. (2)

(Total 8 marks)