

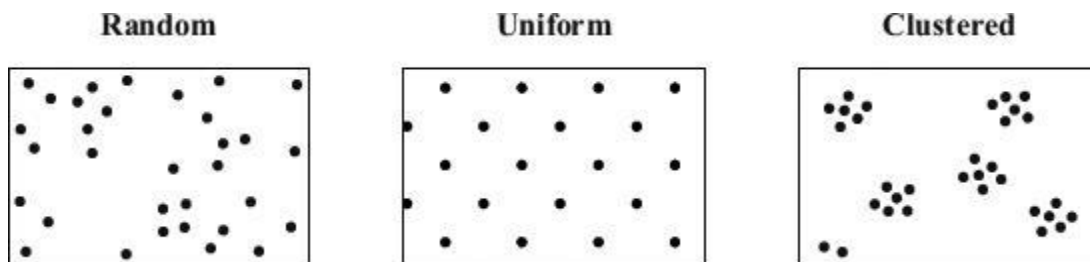
Name of the Student: _____

Max. Marks : 26 Marks

Time : 26 Minutes

Q1.

The diagrams show three types of plant distribution.



- (a) Describe how you would use quadrats to determine whether a particular plant species has a clustered or a random distribution.

(3)

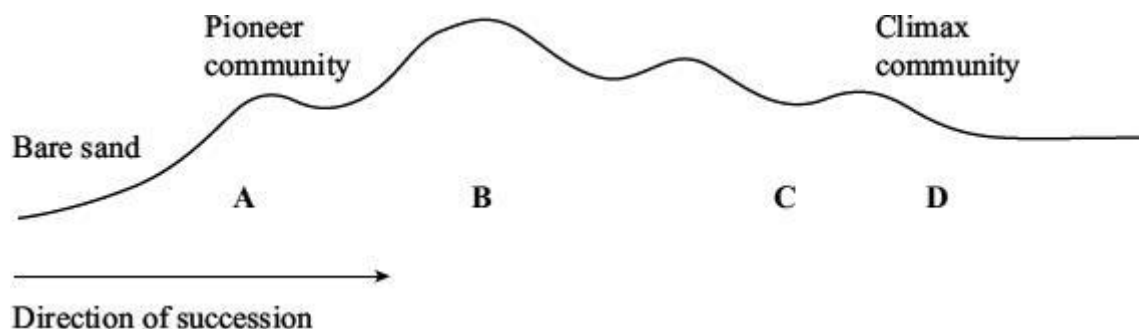
- (b) Some plants in a dry, hot desert have a uniform distribution and are widely spaced. Suggest how this type of distribution is an advantage to the plants.

(2)

(Total 5 marks)

Q2.

In a sand dune succession the pioneer community (**A**) colonises bare sand. This community is replaced over time by other communities (**B** and **C**) until a climax community of woodland (**D**) is formed.



- (a) The communities **A** to **D** are composed of different species. Explain how the change in species composition occurs in a succession.

(3)

- (b) Which community, **A** to **D**, is the most stable? Explain what makes this the most stable community.

(2)

- (c) Many species in the pioneer community are xerophytes. Suggest and explain how having sunken stomata is an advantage to these plants.

(3)

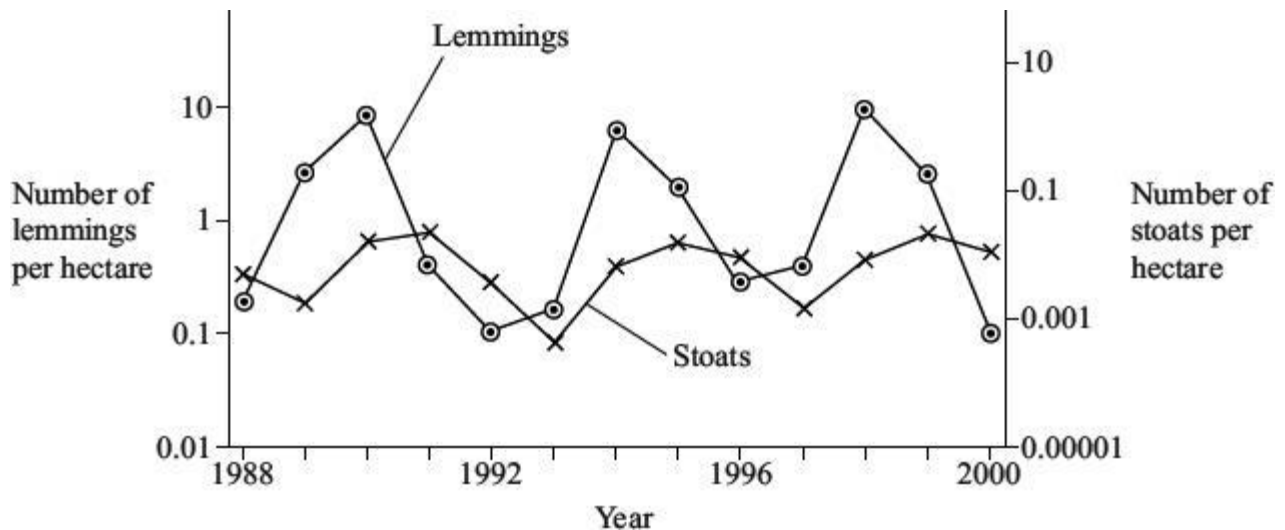
- (d) Explain why it would be more appropriate to use a transect rather than random quadrats when investigating this succession.

(1)

(Total 9 marks)

Q3.

Lemmings are small mammals which live in the Arctic. Their main predator is the stoat, a small carnivorous mammal, which feeds almost entirely on lemmings. The graph shows the changes in the numbers of lemmings and stoats from 1988 to 2000.



- (a) Describe and explain the changes which occur in the lemming and stoat populations.

(6)

- (b) Lemmings often live in isolated populations. From time to time some lemmings move and join other populations. Explain how this movement is important in maintaining genetic variability in lemming populations which have large fluctuations in size.

- (c) James Bay is a large ocean bay in northern Canada. It was formed by the melting of glaciers. One species of lemming inhabits the eastern side of James Bay and another species of lemming inhabits the western side. Before the glaciers melted there was only one species of lemming present. Explain how two species of lemming evolved from the original species.

(4)

(Total 12 marks)