



Exampro A-level Biology

3.4.1 Human Populations

Name:

Class:

Author:

Date:

Time: 61

Marks: 48

Comments: These questions focus on data interpretation

Q1. (a) What information is required in order to calculate the growth rate of a population?

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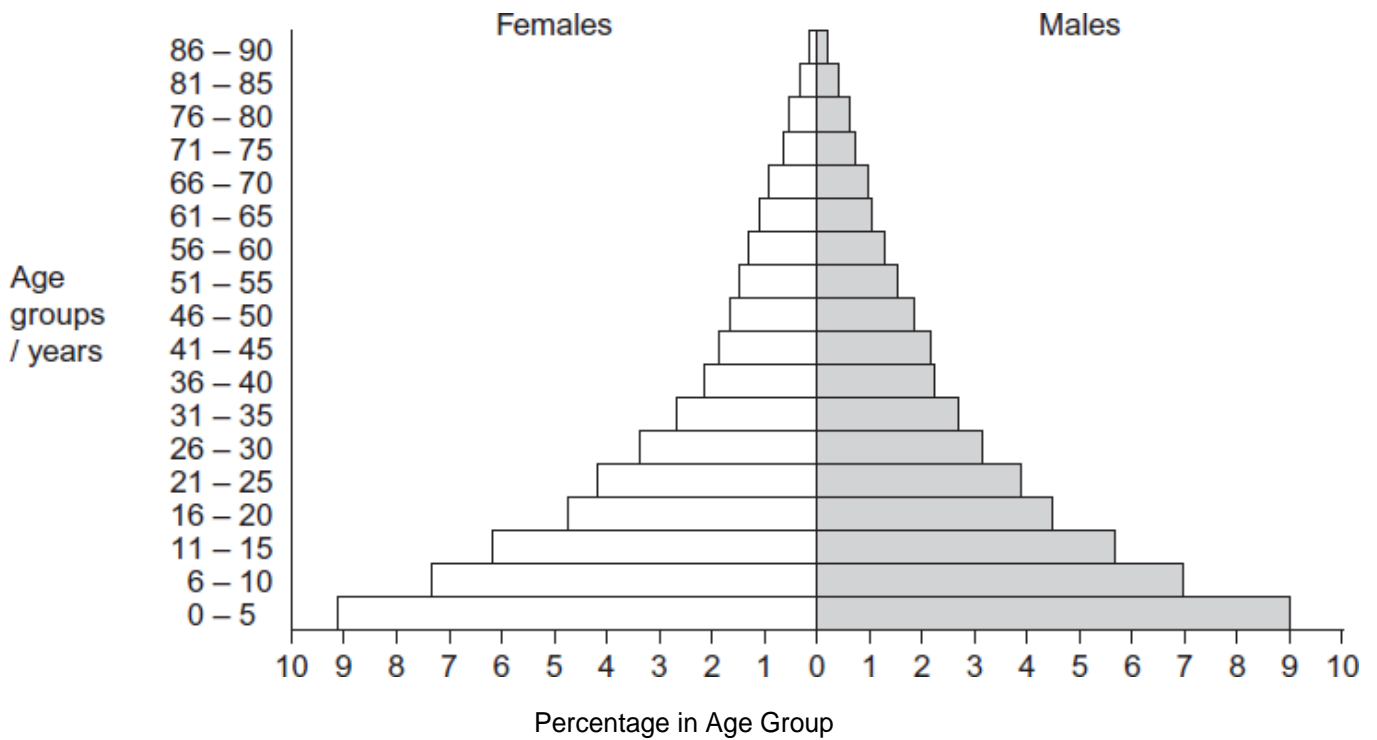
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(2)

(b) The diagram shows an age population pyramid for humans in a country.



This country is at an early stage of demographic transition. Describe the evidence for this.

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(2)
(Total 4 marks)

Q2. (a) Explain what is meant by the term population.

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(1)

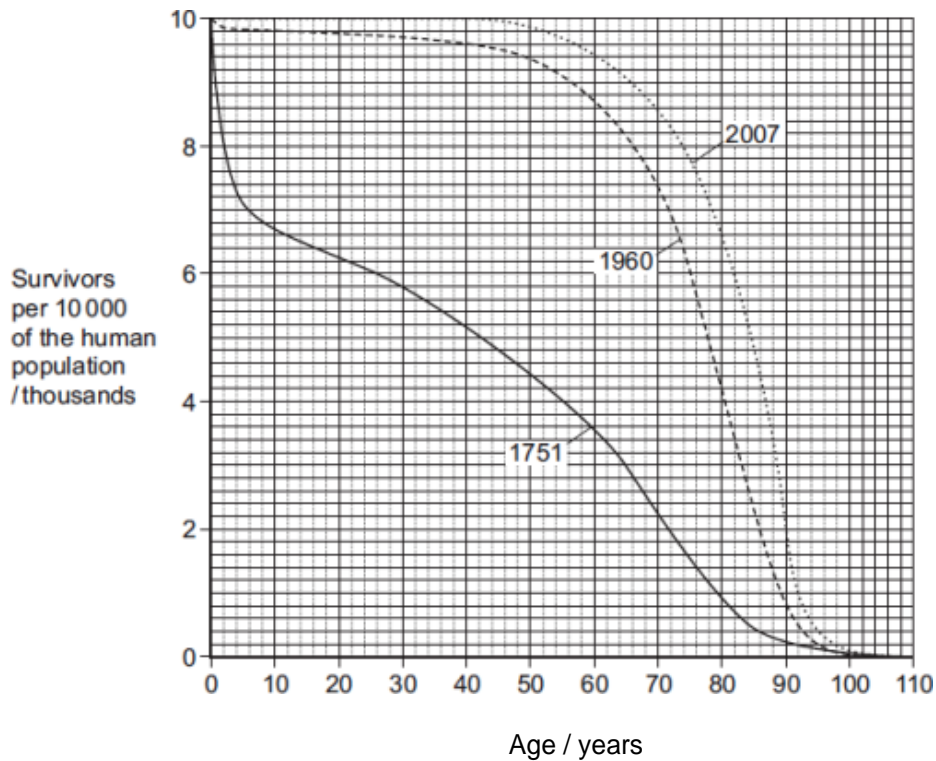
(b) Give **two** factors which could lead to a decrease in the death rate in a human population.

1.....

2.....

(1)

The graph shows survival curves for human populations of the same country in different years.



(c) Calculate the percentage increase from 1751 to 2007 in the number of people who survived to 70 years of age. Show your working.

Answer = %

(2)

- (d) The changes in the survival curves between 1751 and 1960 show that a demographic transition has taken place in this country. Explain how the changes show this.

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(2)
(Total 6 marks)

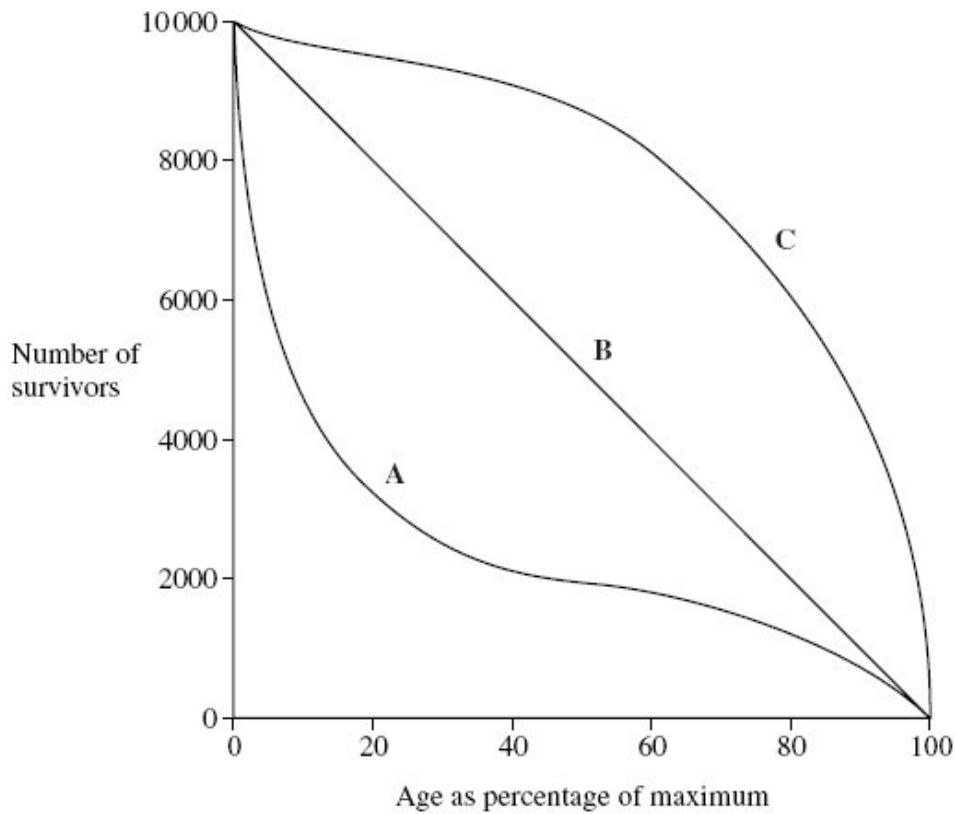
- Q3.** (a) Explain what is meant by the ecological term, population.

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(1)

- (b) The diagram shows three survival curves, **A**, **B** and **C**.



- (i) Assume that the maximum age of a person living in a developed country is 95 years.

The diagram can be used to find the average life expectancy of people living in developed countries. Explain how.

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(3)

- (ii) Curve A is a survival curve for people living in the UK in 1750. Explain why the curve is this shape.

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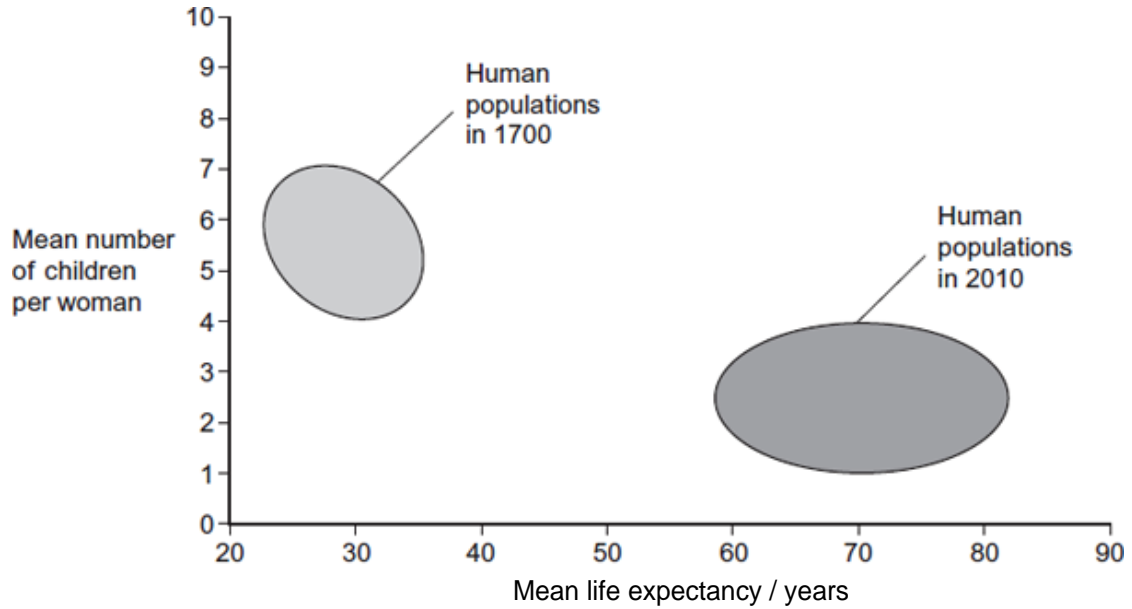
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(2)

(Total 6 marks)

Q4. The figure below shows certain features of human populations in 1700 and 2010.



(a) Give **two** differences between the populations in 1700 and 2010.

- 1.....
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- 2.....
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(2)

(b) Suggest **two** reasons for the differences between the populations in 1700 and 2010.

- 1.....
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-
- 2.....
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(2)

(c) The following table shows some features relating to the human population in Italy in 2010.

Feature	
Total population / millions	60.2
Birth rate per 1000 population	9.3
Death rate per 1000 population	9.7

Use the information in the table to calculate the size of the population of Italy in 2011.
Show your working.

Answer =

(2)
(Total 6 marks)

Q5. (a) Explain what is meant by the ecological term population.

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(1)

(b) Four factors may affect the size of a human population. They are

- Birth rate (**B**)
- Death rate (**D**)
- Emigration rate (**E**)
- Immigration rate (**I**).

Use all the letters **B**, **D**, **E** and **I** to write a formula showing

(i) a population that stays the same size

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(1)

(ii) a population that is increasing in size.

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(1)

(c) The table shows some features relating to the human population of Mexico in 2007.

Features	
Total population / millions	107
Birth rate per 1000 population	20
Death rate per 1000 population	5
Life expectancy / years	76

(i) In 1990 the life expectancy was 70 years. Suggest **one** reason for the change in life expectancy since 1990.

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(1)

(ii) Use the information in the table to calculate the size of the population of Mexico in 2008. Show your working.

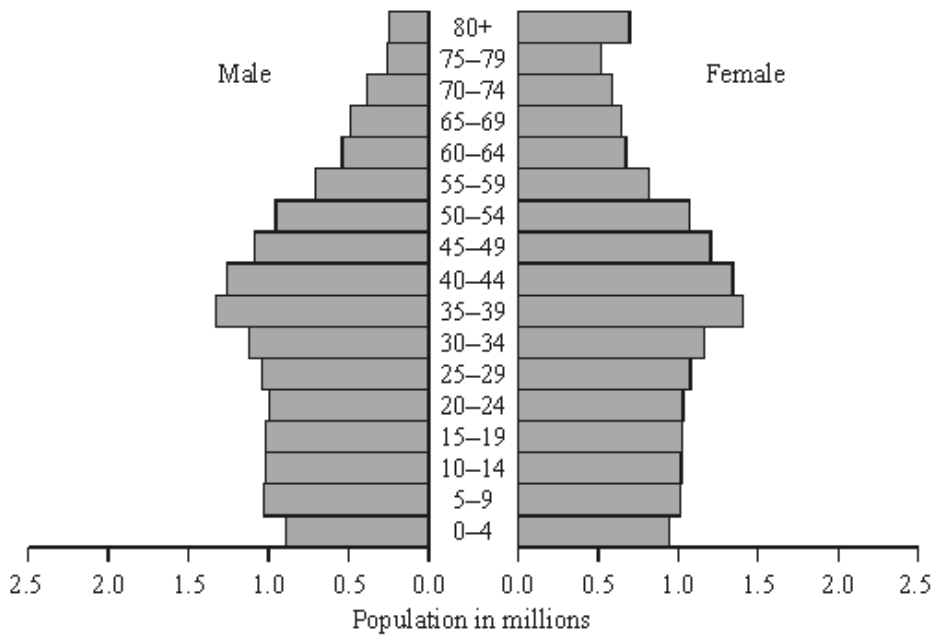
Answer

(2)
(Total 6 marks)

Q6. (a) The population pyramids show the age distribution in two countries in 2000.



Country A



Country B

(i) Describe the pattern of age distribution in each country.

Country A

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Country B

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(2)

(ii) The population size of the two countries is about the same. In which country is the population growing more rapidly? Explain your answer.

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(1)

(b) What information is required in order to calculate the growth rate of a population?

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(2)

(Total 5 marks)

Q7. (a) In a demographic transition, give **one** factor that might cause

(i) an increase in the birth rate;

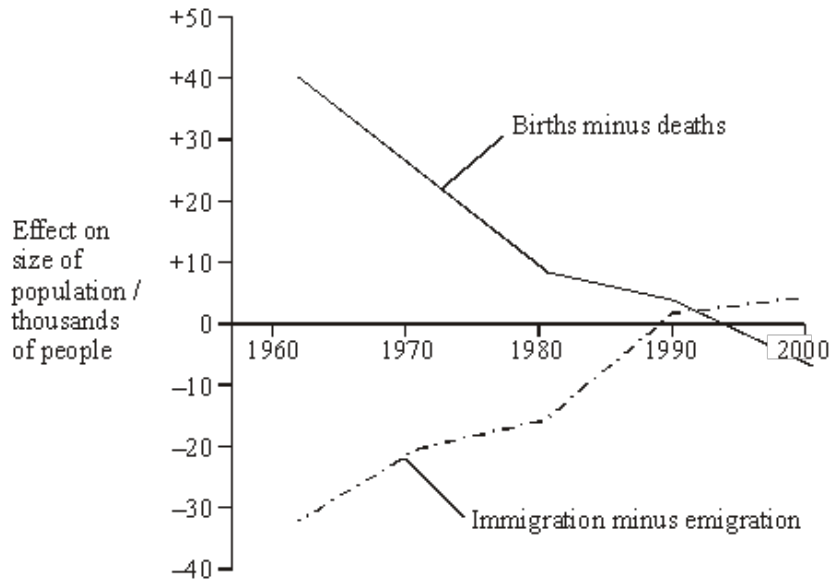
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(ii) a decrease in the death rate.

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(2)

- (b) Births, deaths and migration affect population growth. The graph shows the effects of these factors on a human population between 1960 and 2000. During this period the death rate was almost constant.



- (i) From the information given, what does the graph show about changes in birth rate between 1960 and 1980? Explain your answer.

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(2)

- (ii) Describe the effect of immigration and emigration on the growth of this population between 1960 and 2000.

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(2)

(Total 6 marks)

Q8. The table shows the birth rate, death rate and life expectancy in England and Wales in four different years. You may assume there was no migration.

Year	1851	1901	1931	1961
Birth rate per 1000 population	34.3	28.5	15.8	17.6
Death rate per 1000 population	22.0	16.9	12.3	11.9
Female life expectancy at birth / years	41.9	52.4	62.9	74.0
Male life expectancy at birth / years	39.9	48.5	58.7	68.1

(a) (i) Give the year when the population was growing at the slowest rate. Explain your answer.

Year

Explanation

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(2)

(ii) The population of England and Wales in 1851 was 18 million. Calculate the size of the population in 1852. Show your working.

Answer

(2)

(b) One reason for the decrease in the death rate between 1851 and 1931 was the introduction of mass vaccination. Explain how vaccinating a large proportion of the population reduces the death rate.

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(2)

S (c) Suggest a genetic explanation for the difference in life expectancy of females and males.

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(3)
(Total 9 marks)

