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WORKSHEET

Life Science 12

Week 13

Once your work has been uploaded, I will choose a few questions at random, and it will be for marks.

Lesson 1-3

Question 1 [8]

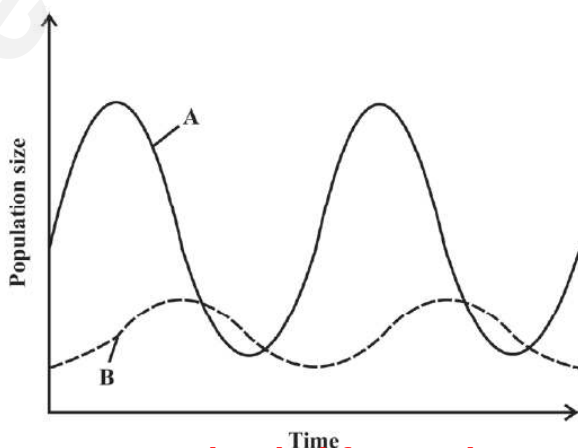
{Adapted from: IEB Paper 1, 2015}

The African Wild Dog, *Lycaon pictus*, is one of the world's most endangered mammals. The largest populations remain in southern Africa and the southern part of East Africa. Wild dogs are some of Africa's most successful hunters, with a kill rate as high as 80%. This means they are even more successful than lions.



[Source: <<http://www.african-safari-pictures.com>>]

1. List THREE reasons why the social structure of African Wild Dog packs makes them such successful hunters. (3)
2. A lone, isolated animal would be easy prey for the African Wild Dog pack, but animals that live in herds are more difficult to capture. Explain ONE reason why this might be the case if the pack were to attempt to capture a young zebra from its herd. (2)
3. The graph below shows how the numbers of predators and prey fluctuate over time. Which lines (A or B) would represent the African Wild Dog population in a reserve? Give TWO reasons for your choice. (3)



WORKSHEET

Life Science 12

Week 13

Question 2 [13]

{Adapted from: IEB Paper 1, 2015}

- Human population growth is of enormous concern. Unless we can bring it under control, the future of humans on this planet is uncertain. Four factors may affect the size of a human population. They are:

- Birth rate
- Death rate
- Emigration rate
- Immigration rate

- Which of these factors would cause a population to decrease in size? (2)

- Read the following article about human populations and answer the questions that follow:

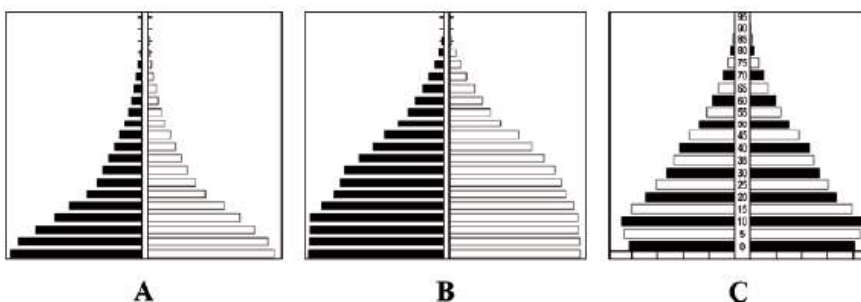
Kenya: In Kenya, rapid population growth since the 1950s has put pressure on resources such as land for farming, water and health care. Use of contraception increased from 7% in 1978 to 46% in 2008, contributing to a reduction in the average number of children per mother from eight to five. However, over 10 million Kenyans still do not have enough food or have poor diets.

China: China's One Child Policy, introduced in 1979, prevented hundreds of millions of births by withdrawing benefits and imposing fines on couples who had more than one child. The policy went against traditions favouring large families and may have led to some women undergoing unwanted abortions or sterilisation and abandoning girl children. Most abortions during this time were of female foetuses.

France: France adopted a policy for the first half of the 20th century – the 'Code de la famille' – which offered strong incentives for having a three-child family. It also included a ban on contraceptives, though this was lifted in the 1960s.

[Source: <<http://bigpictureeducation.com>>]

- Why do you think the French government introduced the 'Code de la famille'? (2)
- State TWO negative implications of China's policy for its future population. (4)
- Explain ONE other strategy that the Chinese government could have implemented to reduce population growth. (2)
- Below are three possible population pyramids for Kenya. Which pyramid (A, B or C) best illustrates the situation in 2008? Explain your choice. (3)



[Source: A & B <<http://geogis-as-population.wikispaces.com>>
C – <http://www.financialtransparency.org>>]

WORKSHEET

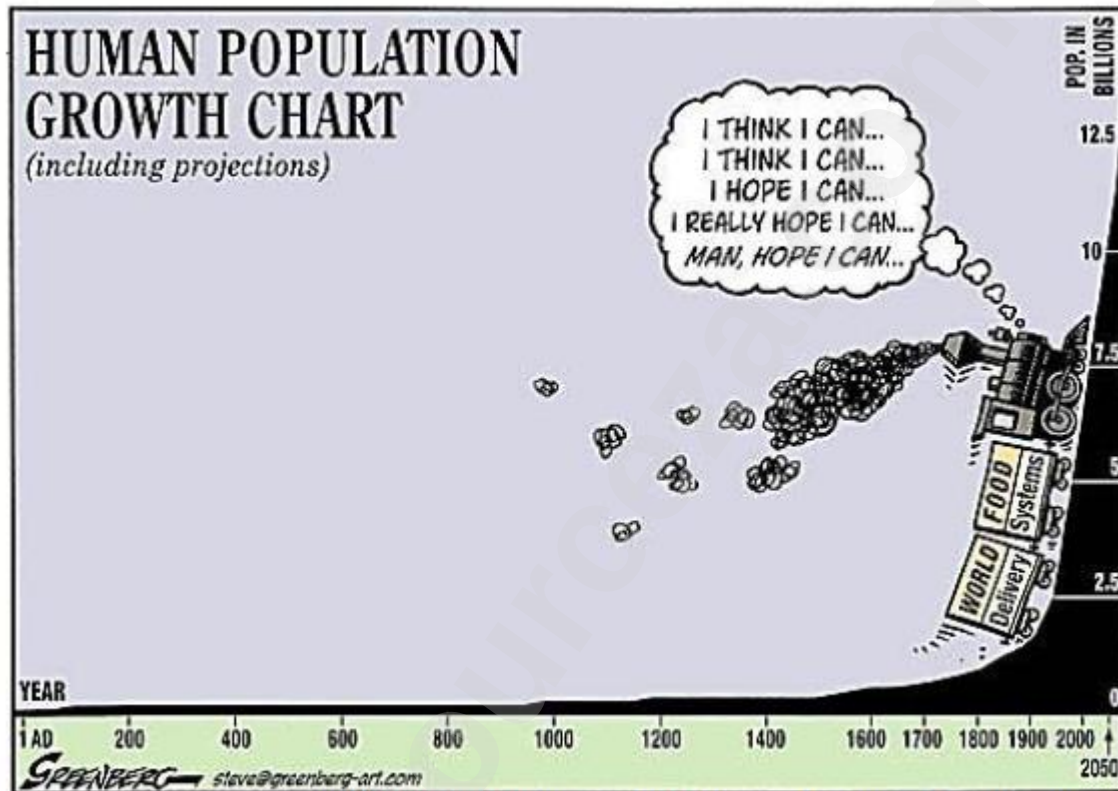
Life Science 12

Week 13

Question 3 [7]

{Adapted from: IEB Paper 1, 2017}

Study the diagram below and answer the questions that follow:



[<<http://motherlode.population-sierraclub-calif.org/images>>]

1. According to the graph, what:
 - (a) was the approximate human population in the year 1900? (1)
 - (b) will the approximate predicted human population in 2050 be? (1)
2. The human population keeps raising its carrying capacity. Explain how we have achieved this. (THREE ways) (3)
3. In your own words, explain the warning expressed in this diagram. (2)

WORKSHEET

Life Science 12

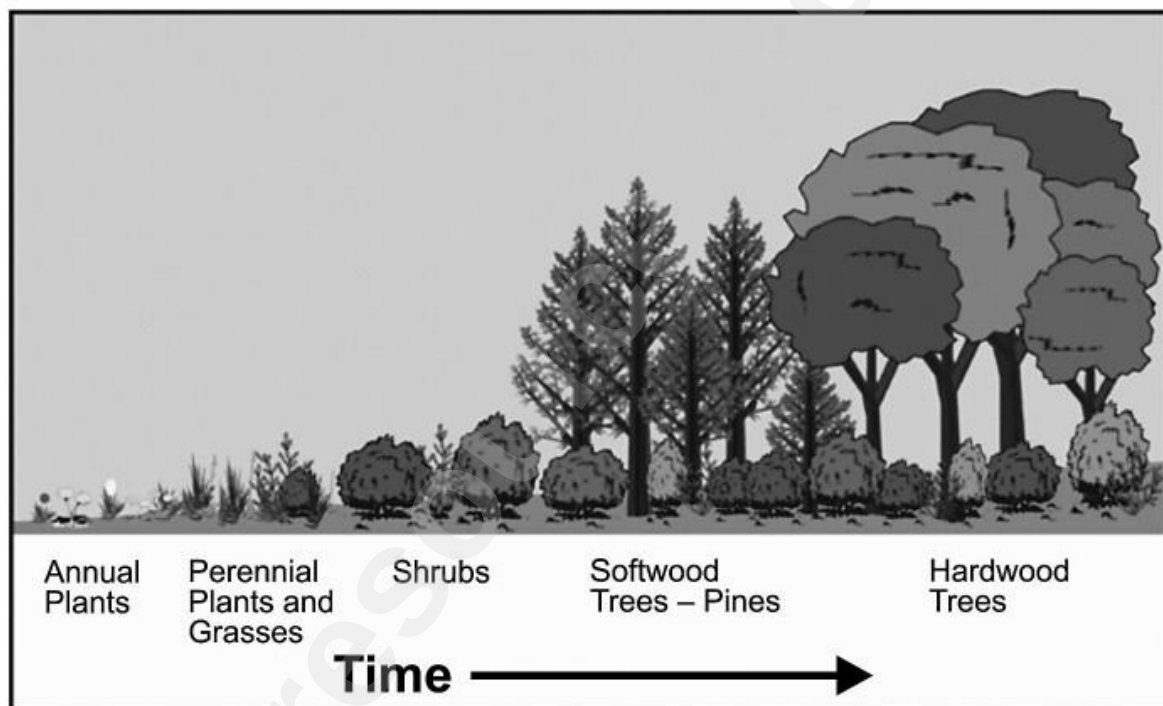
Week 13

Question 4 [15]

{Adapted from: IEB Paper 1, 2018}

A long term study of succession was conducted on abandoned agricultural crop fields. The first stage of succession was characterised by colonisation of annual plant species on bare ground and nutrient poor soils. These annual species had short lifespans (one growing season), rapid maturity, and produced numerous small easily dispersed seeds. The annuals were then quickly replaced in dominance in the next year by plants and grasses. The annuals were then quickly replaced in dominance in the next year by plants and grasses.

Diagram showing the succession of plant species on abandoned crop fields



[Source: <<http://www.physicalgeography.net>>]

1. (a) Identify the type of succession referred to in the text. (1)
 (b) Give a reason for your answer in Question 1 (a). (1)
2. Use the diagram to identify the type of plant present in the climax community. (1)
3. State TWO density dependent factors that would limit the population size of the plants in the climax community. (2)
4. Use the information provided in the text and your own knowledge to explain whether it is possible for agricultural land to be converted into a nature reserve to conserve wildlife. (3)

WORKSHEET

Life Science 12

Week 13

5. Study the table below and answer the questions that follow:

Table showing a comparison of plant, community and ecosystem characteristics between early and late stages of succession		
Characteristic	Early stages of succession	Late stages of succession
Plant life span	(i)	(ii)
Seed dispersal characteristics of dominant plants	Well dispersed	Poorly dispersed
Average plant size	Small	Large

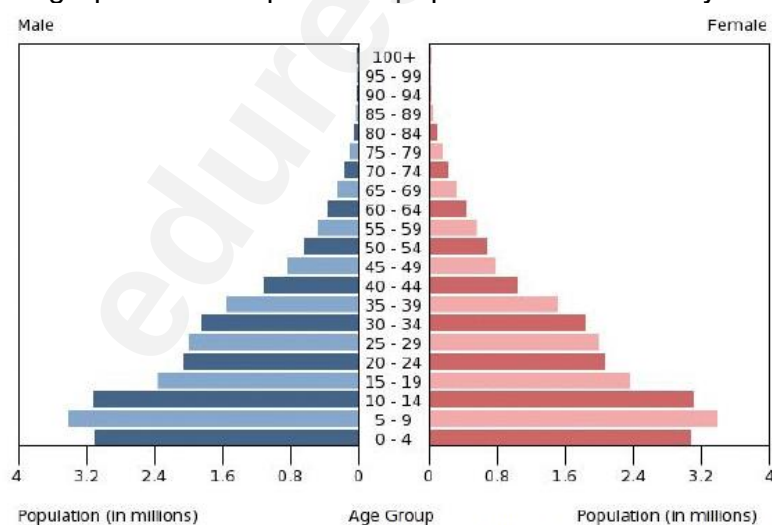
[Adapted: <<http://www.physicalgeography.net>>]

- Provide the term to describe the plants in the early stages of succession. (1)
- Differentiate between the terms "community" and "ecosystem". (2)
- The plant life span in the early stages and late stages of succession has not been filled in on the table. State what the life span should be for plants in both stages of succession at (i) and (ii). (2)
- Plants in the early stages of succession have seeds that are well dispersed. Give TWO advantages of this characteristic. (2)

Question 5 [3]

[Adapted from: IEB Paper 1, 2019]

The graph below depicts the population of a country in 2016.



[Source: <<https://www.indexmundi.com>>]

- Identify whether the graph represents the population from a more-developed country or a less-developed country. Provide TWO reasons to explain your choice. (3)

WORKSHEET

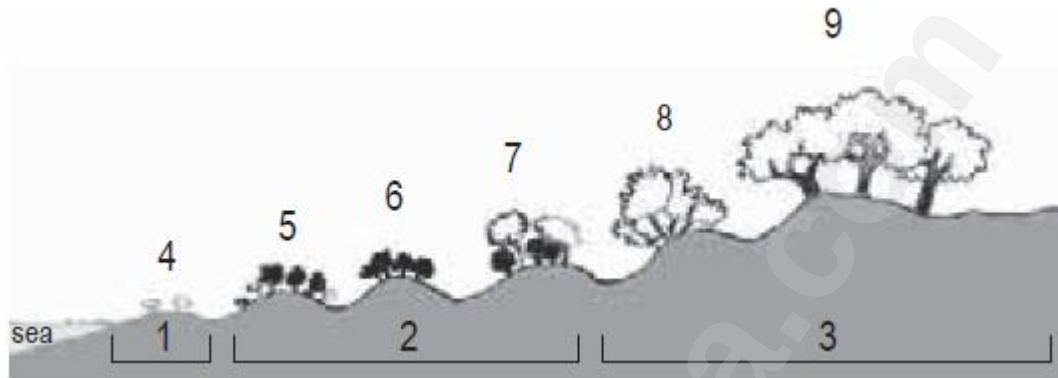
Life Science 12

Week 13

Question 6 [9]

{Adapted from: Mind Action Series}

The following sketch represents how primary succession on a beach could occur.



1. Study the diagram and write down the stages of succession from 1 to 3. (3)
2. At the different periods of the three stages various plant types occur. Next to the three stages of succession, write down the letters, A to F of the plant types that will occur in each of these periods. (6)

- A Hardy shrubs close over pioneers, which disappear
- B Semi-stable state (climax) to an alternative endpoint
- C Pioneers being invaded by hardy shrubs
- D Pioneers help accumulate sand; build and stabilise dunes
- E Hardy shrubs colonised by early succession forest trees
- F Forest closes over shrubs, which disappear

Question 7 [9]

{Adapted from: Mind Action Series}

The termite colony is very successful because work is divided among specialists with each type of individual performing a specific job. Complete the following table.

Caste	Function
1.	
2.	
3.	

WORKSHEET

Life Science 12

Week 13

Question 8 [15]

{Adapted from: IEB Paper 2, 2012}

Refer to the following text and use this to assist you in answering the question below

Social organisation is one way in which a species can increase its chance of survival. Each member of the species has a specific role to play within the group.

Beehives contain different castes (types) of bees each with a particular job to do in the hive. The many hundreds of worker bees (infertile females) look after the larvae, collect nectar and pollen and maintain the hive. The drones are fertile males and they mate with the fertile queen bee who lays about 2 500 eggs per day and dominates the hive. The drones die after mating with the queen. Scout bees look for new nesting sites. The hive requires these jobs to be done in order to survive.

The birth rate and death rate of bees is fairly constant at any time during their life span.

1. Define 'infertile'. (1)
2. Redraw and complete the table below in your Answer Book. Make use of information in the passage above and your own knowledge of termites and wild dogs.

Social organisation	Bees	Termites	Wild dogs
Similarity			
Differences	1. 2.	1. 2.	1. 2.

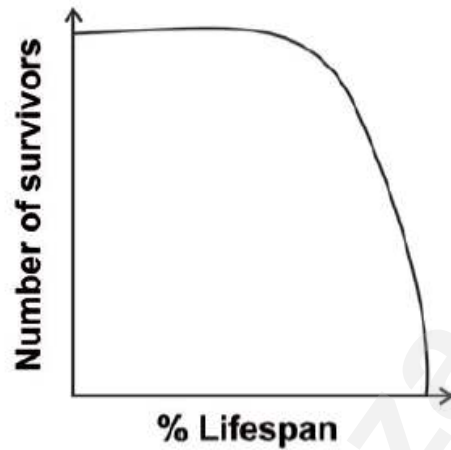
(2)

(6)

3. Explain briefly how wild dogs improve their survival rate through co-operative hunting. (4)

WORKSHEET
Life Science 12
Week 13

4. The following survivorship curve shows the survival rates of individuals over time.



How does this graph represent survivorship in wild dogs?

(2)

[Total: 79 Marks]