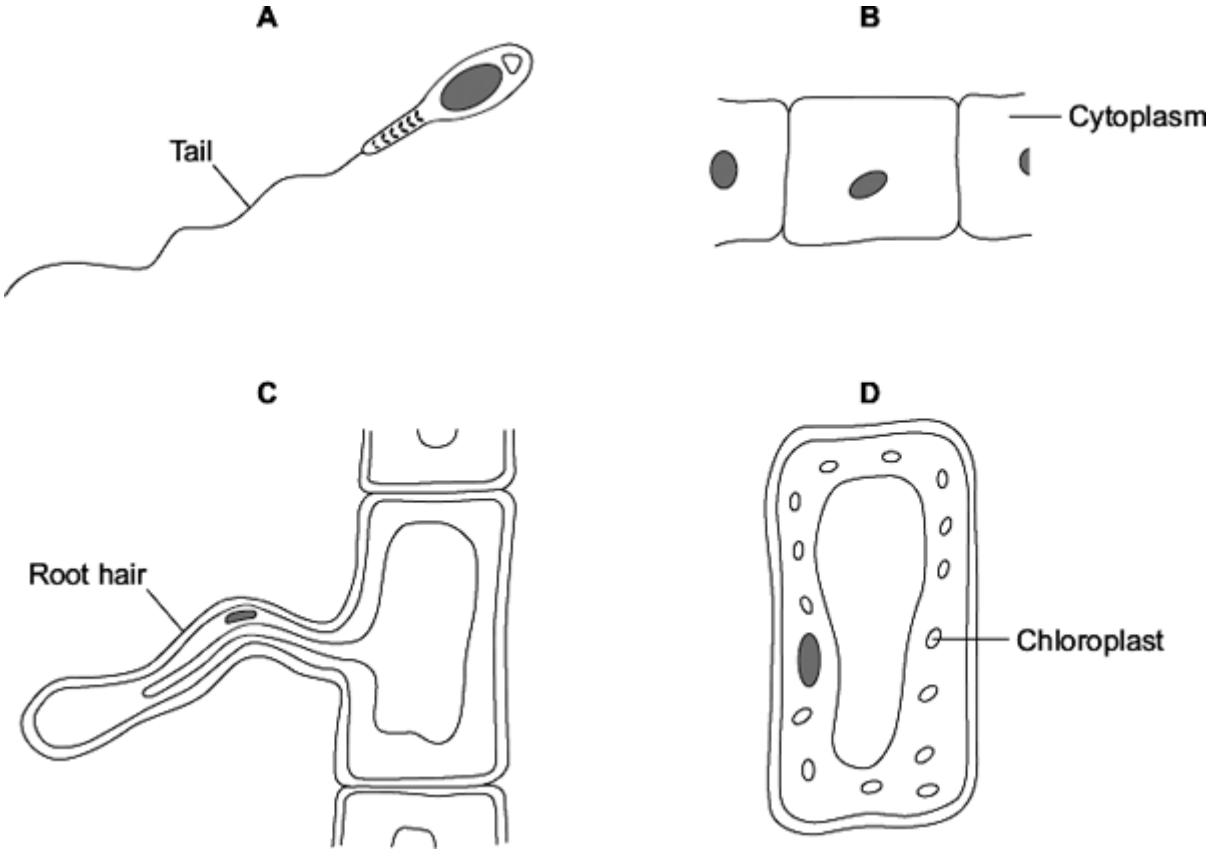
Practice Question Set For GCSE
Subject : Biology
Paper-1 Topic: B4 Bioenergetics

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Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Q1.

The diagrams show four types of cell, **A**, **B**, **C** and **D**.
Two of the cells are plant cells and two are animal cells.



(a) (i) Which **two** of the cells are plant cells?

Tick (✓) **one** box.

A and **B** ☐

A and **D** ☐

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C and **D** ☐

(1)

(ii) Which part is found **only** in plant cells?

Draw a ring around **one** answer.

cell membrane **cell wall** **nucleus**

(1)

(b) (i) Which cell, **A**, **B**, **C** or **D**, is adapted for swimming? ☐

(1)

(ii) Which cell, **A**, **B**, **C** or **D**, can produce glucose by photosynthesis? ☐

(1)

(c) Cells **A**, **B**, **C** and **D** all use oxygen.

For what process do cells use oxygen?

Draw a ring around **one** answer.

osmosis **photosynthesis** **respiration**

(1)

(Total 5 marks)

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Q2.

Muscles need energy during exercise.

Draw a ring around the correct answer in parts (a) and (b) to complete each sentence.

(a) (i) The substance stored in the muscles and used during exercise is

glycogen.

lactic acid.

protein.

(1)

(ii) The process that releases energy in muscles is

digestion.

respiration.

transpiration.

(1)

(b) The table shows how much energy is used by two men of different masses when swimming at different speeds.

Speed of swimming in metres per minute	**Energy used in kJ per hour**	
	34 kg man	**70 kg man**
25	651	1155
50	1134	2103

(i) When the 34 kg man swims at 50 metres per minute instead of at 25 metres per minute,

the extra energy he uses each hour is

36 kJ.

483 kJ.

948 kJ.

(1)

(ii) When swimming at 50 metres per minute, each man's heart rate is faster than when swimming at 25 metres per minute.

A faster heart rate helps to supply the muscles with more

carbon dioxide.

glycogen.

oxygen.

(1)

constrict.

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(iii) During the exercise the arteries supplying the muscles would

dilate.
pump harder.

(1)

(c) When a person starts to swim, the breathing rate increases.

Give **one** way in which this increase helps the swimmer.

_____

_____

(1)

(Total 6 marks)

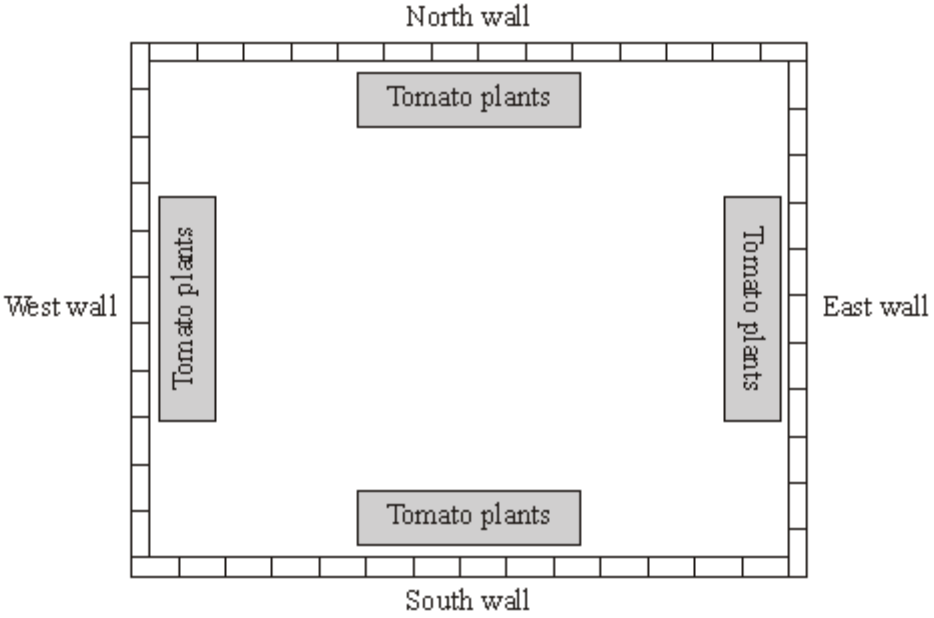
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Q3.

A gardener grows tomatoes.

He wants to find out how to get the biggest mass of tomatoes.

He plants different varieties of tomato against different walls in his garden.



Use these results to answer the questions.

(a) The gardener wants his test to be fair.

Name **one** condition which he should keep the same for all his tomato plants.

_____

_____

(1)

(b) The table shows the gardener's results.

Variety of tomato plant	**Sungold**	**Sungold**	**Sungold**	**Sungold**	**Nugget**	**Champion**
Wall they were planted against	North	West	South	East	East	East
Mean mass of tomatoes produced in kilograms per plant	3.5	3.0	1.2	2.5	3.2	2.7

(i) To obtain the biggest mass of tomatoes, against which wall is it best to grow the tomato plants?

Tick (✓) **one** box.

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North wall ☐

South wall ☐

East wall ☐

West wall ☐

(1)

(ii) To obtain the biggest mass of tomatoes, which variety of tomato plant would it be best to grow?

_____

(1)

(c) From the information in the table, the gardener's test was **not** fair.

Give **one** way in which the test was **not** fair.

_____

_____

(1)

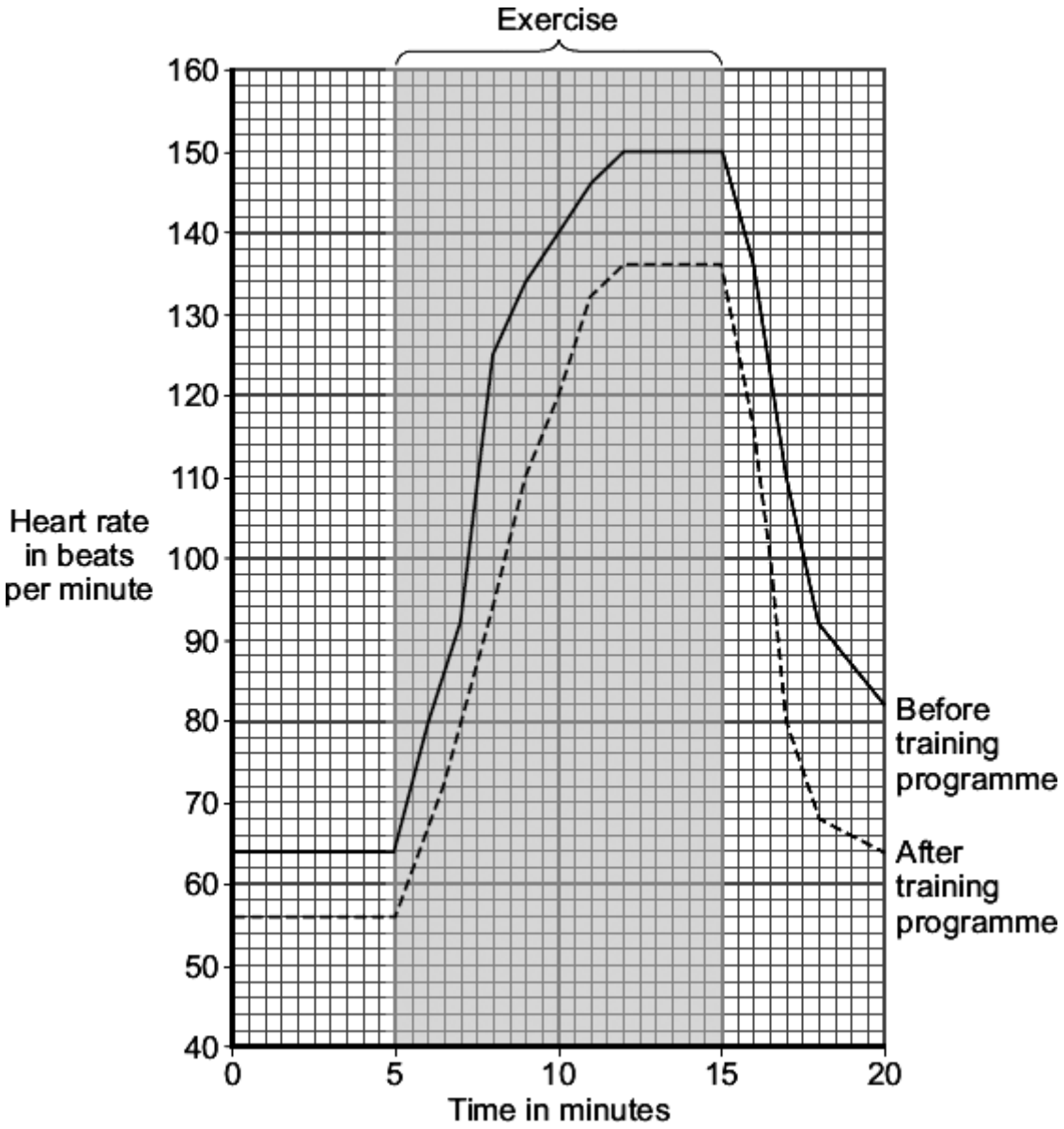
(Total 4 marks)

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Q4.

An athlete did a 6-month training programme.

The graph shows the effect of the same amount of exercise on his heart rate before and after the training programme.



(a) (i) What was the maximum heart rate of the athlete during exercise before the training programme?

_____ beats per minute

(1)

(ii) Give **two** differences between the heart rate of the athlete before and after the training programme.

After the training programme

Difference 1 _____

_____

Difference 2 _____

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(2)

(b) Which **two** substances need to be supplied to the muscles in larger amounts during exercise?

Tick (✓) **two** boxes.

- Carbon dioxide ☐
- Glucose ☐
- Lactic acid ☐
- Oxygen ☐
- Urea ☐

(2)
(Total 5 marks)

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