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

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Name of the Student:_____
Max. Marks : 27 Marks **Time : 27 Minutes**

Q1.

Some students estimated the population of daisies in a school field.

This is the method used.

1. Find a place where some daisies are growing.
2. Put the quadrat down.
3. Count and record the number of daisies in the quadrat.
4. Repeat steps 1–3 at four different places in the field.
5. Calculate the mean number of daisies per quadrat.
6. Use the data to estimate the total number of daisies in the field.

(a) Which **two** improvements would increase the validity of this method?

Tick (✓) **two** boxes.

Do not put any quadrats near trees.	☐
Repeat for another ten quadrats.	☐
Use a long tape measure.	☐
Use a random method to place the quadrats.	☐
Use the same person to place all the quadrats.	☐

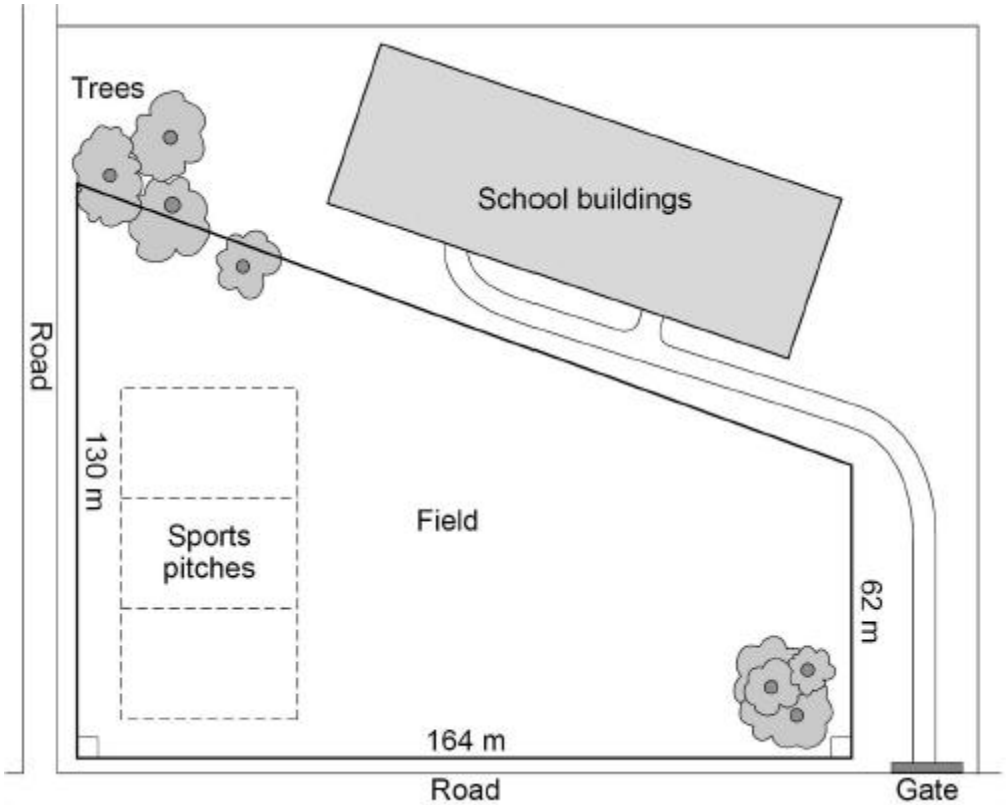
(2)

(b) With an improved method the students calculated the mean number of daisy plants to be 7.65 per quadrat.

The students used a quadrat measuring 50 cm × 50 cm

The diagram shows the school site and the dimensions of the school field.

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Calculate the population of daisy plants on the school field.

Give your answer in standard form to 2 significant figures.

Population of daisy plants = _____

(5)

(c) The students noticed a very uneven distribution of daisy plants in the field.

Explain how different biotic factors **and** abiotic factors could have caused an uneven distribution of daisy plants.

Use the diagram above.

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(6)
(Total 13 marks)

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Q2.

This question is about homeostasis.

(a) Define the term homeostasis.

_____

_____

_____

_____

(2)

(b) Name the hormone released if the blood glucose concentration falls too low.

_____

(1)

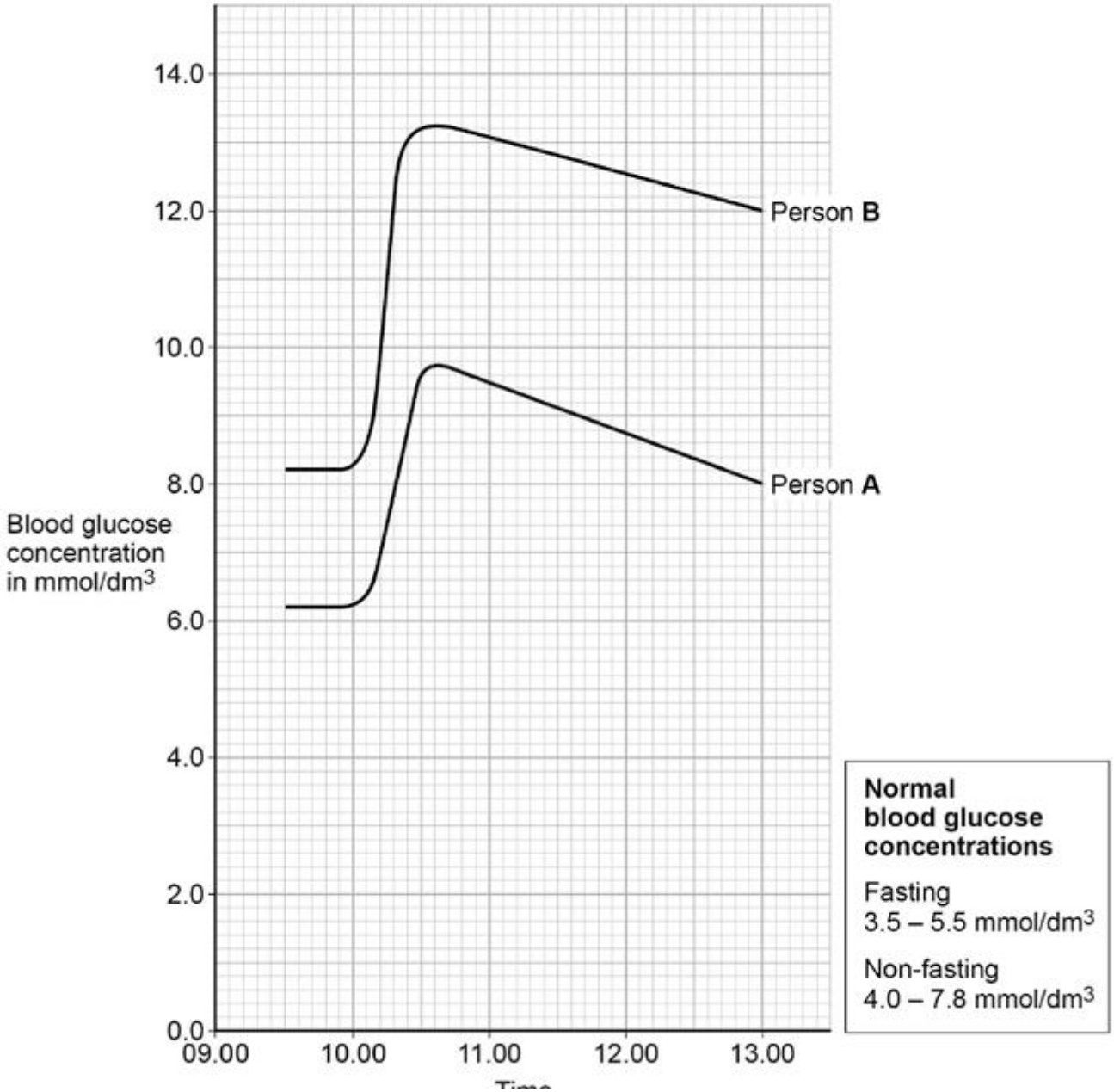
Two people were sent to a hospital to find out if they have diabetes.

This is the method used at the hospital.

- Do not eat or drink after midnight. This is called fasting.
- Measure blood glucose concentration at 9.30 am
- Drink a glucose solution at 10.00 am
- Measure blood glucose concentration for the next 3 hours.

The graph shows the results.

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Person **A** and person **B** have diabetes.

(c) Describe how the graph above shows that person **B** has diabetes.

Use data from the graph.

_____

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_____

(3)

(d) Person **A** and person **B** had a test to measure the concentration of insulin in their blood when

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they were fasting.

The table shows the results.

Person	**Fasting blood insulin concentration in arbitrary units**
A	280
B	20
Normal range	50–175

Suggest which type of diabetes person **A** and person **B** have.

Give a reason for each answer.

Person **A**

Type of diabetes _____

Reason _____

_____

Person **B**

Type of diabetes _____

Reason _____

_____

(2)

(e) Toxic hypoglycaemia syndrome (THS) has caused the deaths of hundreds of starving children in some tropical countries.

- The starving children have had nothing to eat all day.
- The starving children then eat many lychee fruits.
- The lychee fruits contain a molecule which stops an enzyme in the liver working.
- This enzyme normally converts stored fats into glucose.

Children who have eaten during the day are **not** affected by eating many lychee fruits.

Starving children may die from eating many lychee fruits but children who have eaten during the day are not affected.

Explain why.

_____

_____

_____

_____

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(6)

(Total 14 marks)

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