

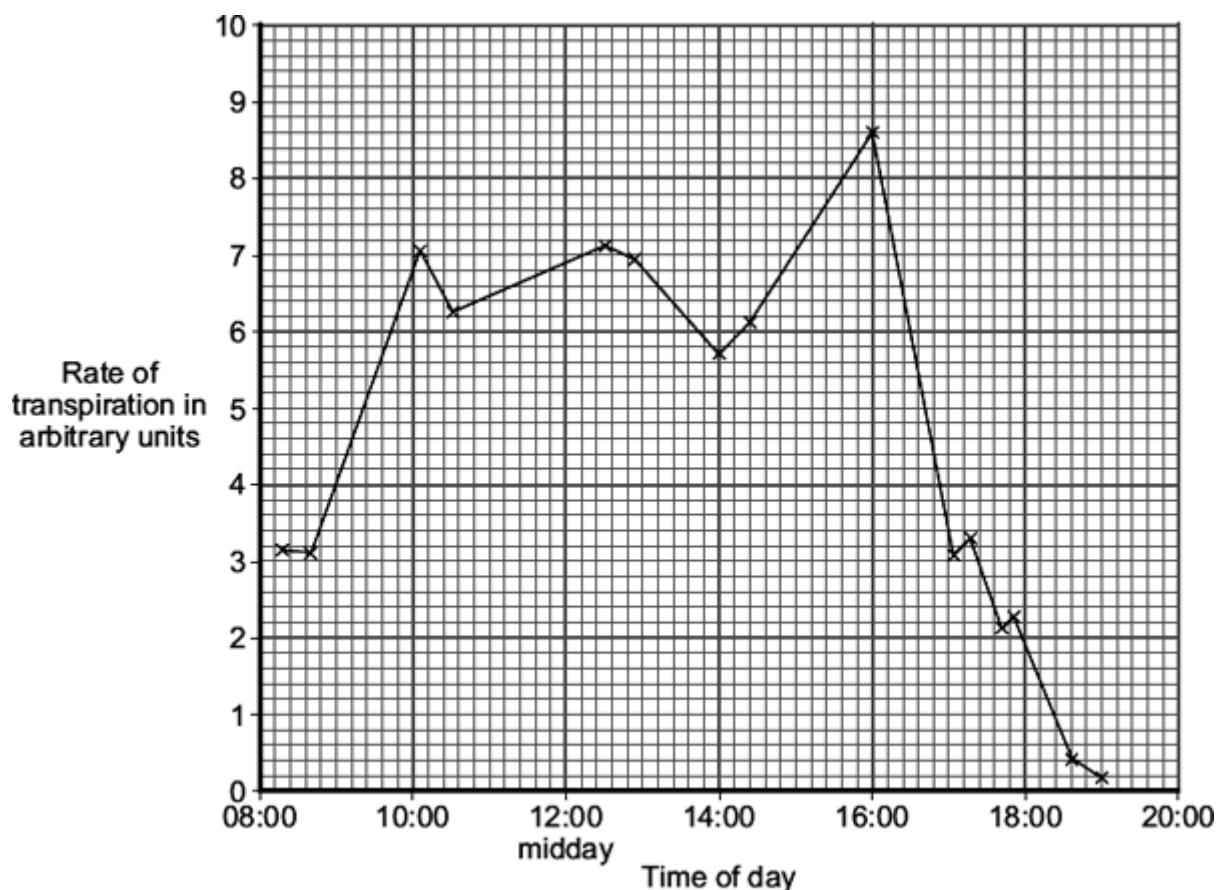
Name of the Student: _____

Max. Marks : 22 Marks

Time : 22 Minutes

Q1.

The graph shows the rate of transpiration from a plant at different times of the day.



Transpiration occurs mainly in the leaves of a plant.

(a) (i) What is *transpiration*?

(2)

(ii) Through which part of a leaf does most transpiration occur?

(b) In this investigation, the rate of transpiration decreases between 16:00 hours and 19:00 hours.

- (i) Calculate the average rate of decrease per hour in the rate of transpiration over this time.

Show clearly how you work out your answer.

Rate = _____ arbitrary units per hour

(2)

- (ii) Suggest **one** explanation for the decrease in the rate of transpiration between 16:00 hours and 19:00 hours.

(2)

(Total 7 marks)

Q2.

Scientists at a drug company developed a new pain-killing drug, drug **X**.

- (a) Painkillers do **not** cure infectious diseases.

Why?

(1)

- (b) The scientists compared drug **X** with two other pain-killing drugs, drug **A** and drug **B**. In their investigation the scientists:
- chose 600 volunteers. The volunteers were all in pain
 - gave 200 of the volunteers a standard dose of drug **A**
 - gave 200 of the volunteers a standard dose of drug **B**
 - gave 200 of the volunteers a standard dose of drug **X**.

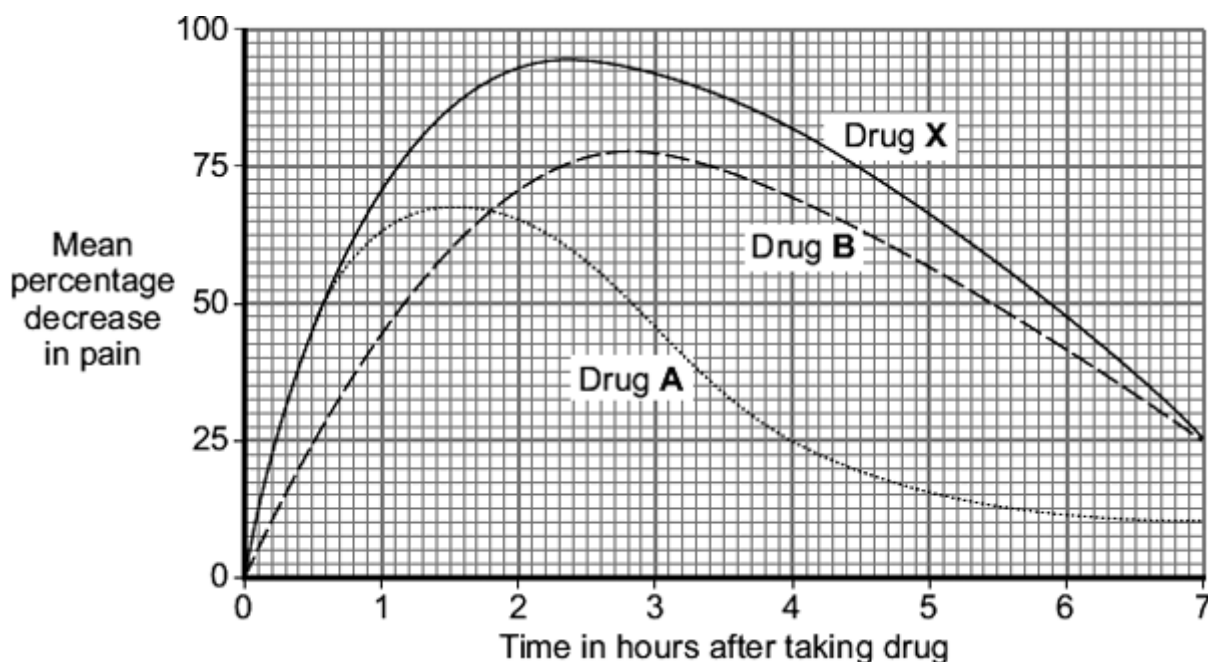
Over the next seven hours the volunteers recorded how much pain they felt.

To get valid results the three groups of volunteers should be matched for as many factors as possible.

Suggest **two** of the factors that should be matched.

(2)

- (c) The graph shows the results of the investigation.



- (i) How much pain did the volunteers still feel, four hours after taking drug **A**?

_____ percent

(1)

- (ii) Give **one** advantage of taking drug **A** and **not** drug **B**.

(1)

(iii) Give **two** advantages of taking drug **B** and **not** drug **A**.

(2)

(d) Drug **X** is much more expensive than both drug **A** and drug **B**.

A pharmacist advised a customer that it would be just as good to take drug **A** and drug **B** together instead of drug **X**.

Do you agree with the pharmacist's advice?

Give reasons for your answer.

(3)

(Total 10 marks)

Q3.

A patient has a disease. The disease damages his pancreas.

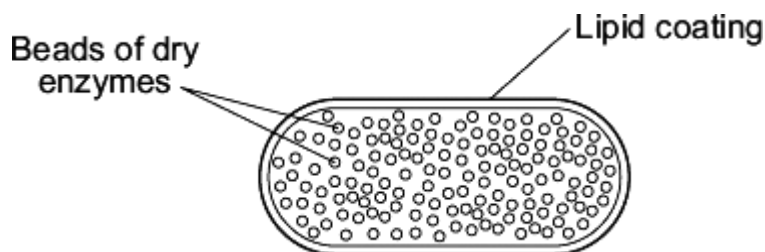
A doctor prescribes a course of treatment for the patient:

'Take one capsule with each meal.'

Each capsule contains hundreds of small, dry beads.

The beads are made of enzymes. The pancreas normally produces these enzymes.

The outer coating of the capsule is made of lipid.



- (a) One enzyme in the beads is lipase.

In a healthy person, lipase is made in the pancreas.

Name **two** other enzymes made in the pancreas of a healthy person.

1. _____

2. _____

(2)

- (b) The lipid coating on the capsule makes sure that the enzymes are not released until the capsule reaches the small intestine.

Explain how.

(2)

- (c) The lipase in the beads does **not** digest the lipid coating around the capsule.

Suggest why.

(1)

(Total 5 marks)