Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel
Level 1/Level 2 GCSE (9–1)

Centre Number | | | | | |

Candidate Number | | | | |

Tuesday 12 May 2020

Afternoon (Time: 1 hour 10 minutes) | Paper Reference **1SC0/1BF**

Combined Science

Paper 1

Foundation Tier

You must have:
Calculator, ruler

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- Calculators may be used.
- Any diagrams may NOT be accurately drawn, unless otherwise indicated.
- You must **show all your working out** with **your answer clearly identified** at the **end of your solution**.

Information

- The total mark for this paper is 60.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- In questions marked with an **asterisk** (*), marks will be awarded for your ability to structure your answer logically showing how the points that you make are related or follow on from each other where appropriate.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

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P 6 2 0 8 8 A 0 1 2 0

Pearson

Answer ALL questions. Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒.
If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1 (a) Figure 1 shows three cells.

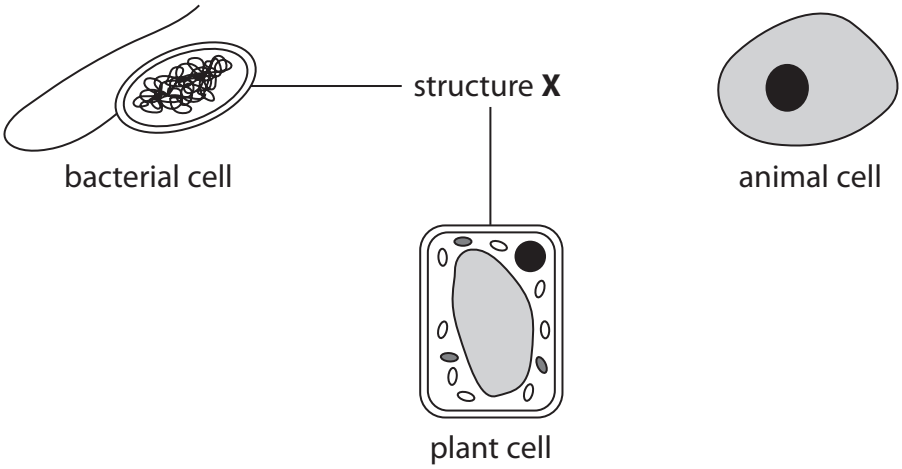

Figure 1

(i) What is structure **X**?

(1)

☒ **A** cell membrane

☒ **B** cell wall

☒ **C** cytoplasm

☒ **D** nucleus

(ii) The bacterial cell in Figure 1 has a flagellum.

State the function of a flagellum.

(1)

.....

.....

(iii) Give **one** other difference between the bacterial cell and the animal cell shown in Figure 1.

(1)

.....

.....

(b) Substances move into and out of cells.

How does oxygen move into and out of cells?

(1)

☒ **A** transpiration

☒ **B** active transport

☒ **C** diffusion

☒ **D** osmosis

(c) A plant leaf cell is 0.04 mm long.

Calculate the length of the image after this cell has been magnified 500 times.

(2)

length of image = ...mm

(Total for Question 1 = 6 marks)

2 (a) A student placed three different sized cubes of agar jelly into separate beakers containing the same concentration of hydrochloric acid.

The cubes contained a pink indicator.

This indicator becomes clear when in contact with an acid.

Figure 2 shows the results of the investigation after the cubes had been in the acid for 120 seconds.

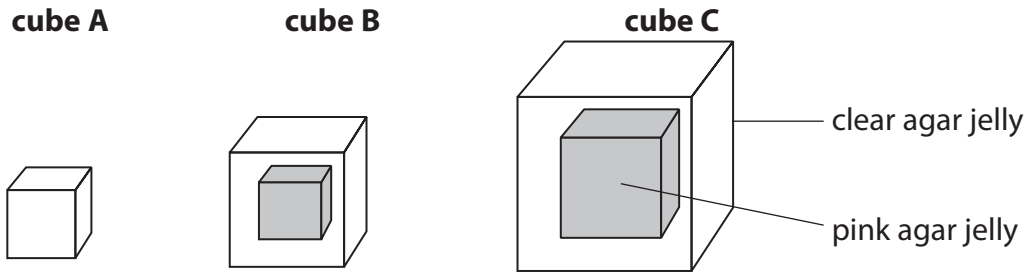

Figure 2

(i) The distance from the outside of cube B to the pink area was 3 mm.

Calculate the distance diffused by hydrochloric acid in **one** second.

(2)

..... mm

(ii) The student wanted to confirm their results.

Give **one** improvement the student should make to this investigation to confirm their results.

(1)

.....

.....

.....

(b) Devise a method, using cubes of agar jelly, to investigate how temperature affects the rate of diffusion.

(3)

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.....

.....

(c) Some substances move into and out of cells by active transport.

Which is the correct description of the movement of a substance by active transport?

(1)

☒ **A** against a concentration gradient using energy

☒ **B** down a concentration gradient using energy

☒ **C** against a concentration gradient without using energy

☒ **D** down a concentration gradient without using energy

(d) Some drugs used to treat cancer are taken into cells by active transport.

Figure 3 shows some causes of preventable cases of cancer in 2015.

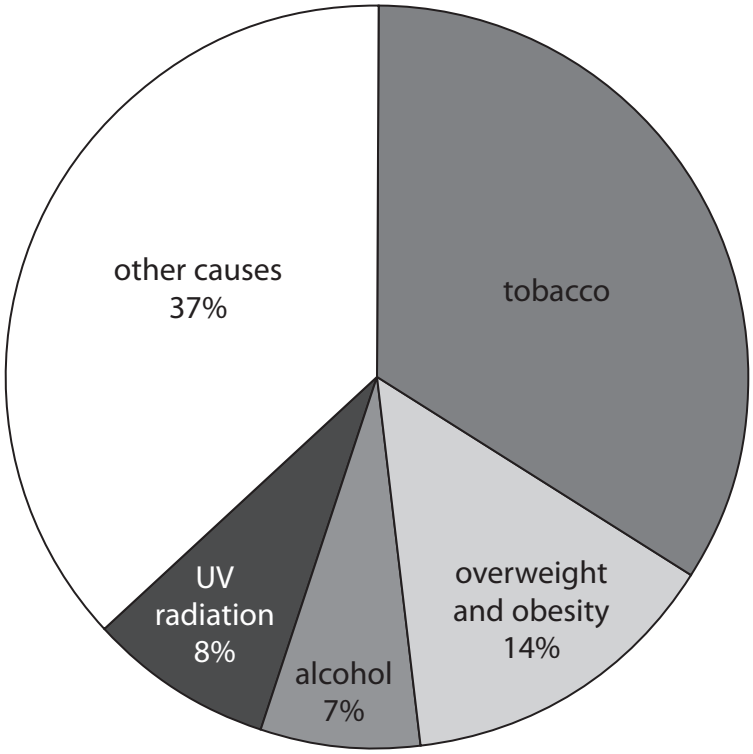

Figure 3

(i) What is the percentage of preventable cases of cancer that are caused by tobacco?

(1)

☒ **A** 41%

☒ **B** 37%

☒ **C** 34%

☒ **D** 26%

(ii) In 2015, data from Cancer Research UK suggested that 163 440 cases of cancer could have been prevented.

Calculate the number of preventable cases of cancer caused by alcohol.

Give your answer to the nearest whole number.

(2)

number of preventable cases of cancer caused by alcohol .....

(Total for Question 2 = 10 marks)

3 (a) Farmers selectively breed chickens to produce larger chickens.

Figure 4 shows how the size of chickens has changed over time.

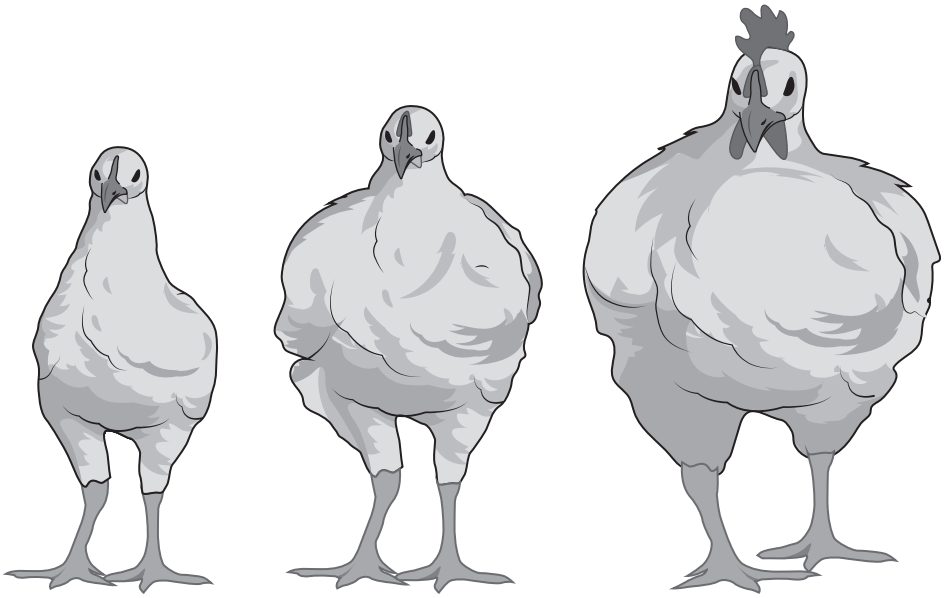

Figure 4

(i) Explain how farmers have used selective breeding to produce larger chickens.

(3)

(ii) Describe **one** benefit and **one** risk of selectively breeding chickens.

(2)

benefit .....

.....

.....

.....

risk .....

.....

.....

.....

(b) The body cells of chickens have 78 chromosomes in their nuclei.

(i) State the number of chromosomes found in each sex cell of a chicken.

(1)

.....

(ii) Name the type of cell division which produces sex cells.

(1)

.....

(c) (i) What is the correct definition of a genome?

(1)

☒ **A** all the cells of an organism

☒ **B** all the enzymes of an organism

☒ **C** all the genetic material of an organism

☒ **D** all the cytoplasm of an organism

(ii) A new project called the Earth BioGenome Project aims to discover the sequence of bases in the DNA for all plants and animals.

State **two** benefits of discovering the sequence of bases for all plants and animals.

(2)

1 .....

.....

.....

2 .....

.....

.....

(Total for Question 3 = 10 marks)

4 (a) A student investigated the activity of a human enzyme at different temperatures.

The student measured the mass of product formed after 10 minutes at different temperatures.

Figure 5 shows the results of this investigation.

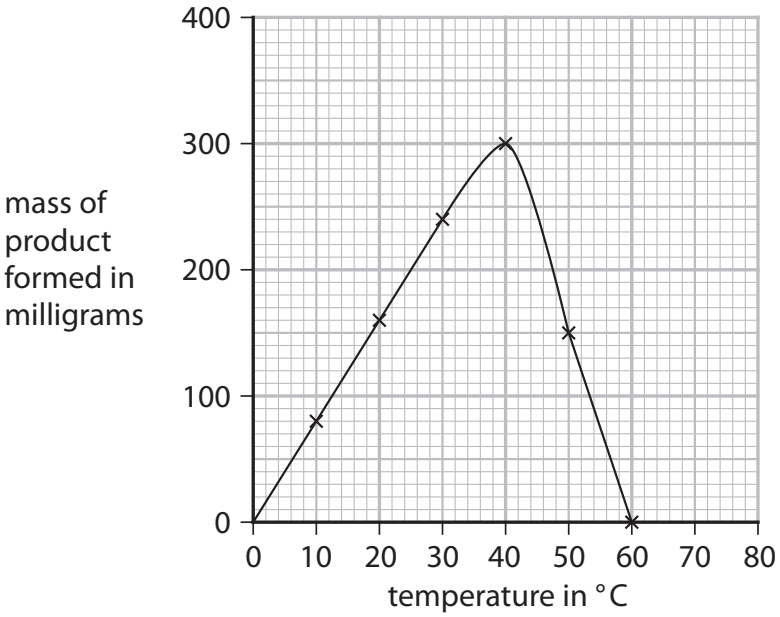

Figure 5

(i) Describe the trends shown in Figure 5.

(2)

(ii) Explain the results obtained for temperatures from 40 °C to 60 °C.

(2)

(b) Some enzymes are involved in the breakdown of food substances.

(i) Draw **one** straight line from each food group to the products of digestion for that food group.

(2)

food group	products of digestion
	fatty acids and glycerol
carbohydrate	amino acids
	glucose
fat	starch
	ethanol

(ii) Which enzyme breaks down fat?

(1)

- ☒ **A** carbohydrase
- ☒ **B** amylase
- ☒ **C** protease
- ☒ **D** lipase

(c) Figure 6 shows an enzyme and two substrates, P and Q.

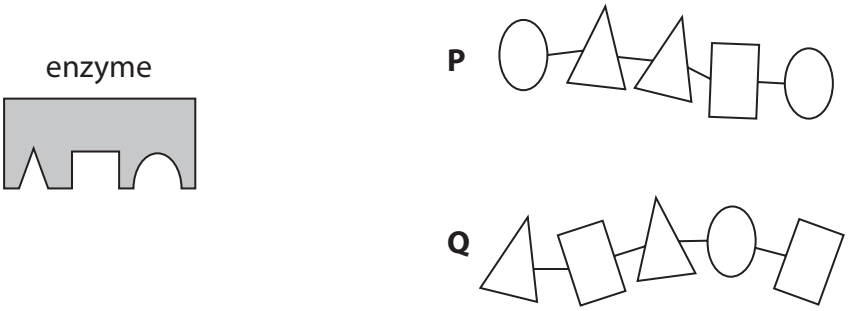

Figure 6

Explain the reason why no product will be formed if the enzyme is mixed with substrate **Q**.

(3)

(Total for Question 4 = 10 marks)

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5 (a) Measles is a communicable disease caused by a virus.

(i) What can a virus also be classified as?

(1)

☒ **A** a bacterium

☒ **B** a fungus

☒ **C** a pathogen

☒ **D** a protist

(ii) Give **one** reason why measles is described as a communicable disease.

(1)

.....

.....

.....

(b) The human immunodeficiency virus (HIV) can cause AIDS.

Which type of cell is destroyed by the HIV virus?

(1)

☒ **A** red blood cell

☒ **B** nerve cell

☒ **C** white blood cell

☒ **D** sperm cell

(c) Describe how the specific immune system defends the body against disease.

(3)

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.....

(d) Figure 7 shows the number of people per million **of the population** in five European countries who were diagnosed with measles in one year.

country	number of people diagnosed with measles per million of the population
Belgium	21.00
France	15.63
Germany	8.42
Italy	20.06
Norway	0.05

Figure 7

(i) The population of Belgium in that year was 11.18 million.

Calculate the number of people in Belgium diagnosed with measles.

Give your answer to three significant figures.

(3)

.....people

(ii) Countries do not report the total number of people diagnosed with measles. Countries report the number of people diagnosed with measles per million of the population.

Give **one** reason why this is better.

(1)

.....

.....

(iii) Give **one** reason why the number of people per million diagnosed with measles is different in these countries.

(1)

.....

.....

.....

(Total for Question 5 = 11 marks)

6 Figure 8 shows a banana plantation.

Figure 8

After the bananas have been harvested, the old plants are cut down.

The suckers then develop into mature plants producing the next crop of bananas.

The tip of each sucker contains a group of cells called a meristem.

(a) (i) Describe the function of a meristem in the growth of a plant.

(2)

(ii) A student took a sample of cells from a meristem to view under a light microscope.

Describe how the student would prepare a microscope slide using these cells.

(3)

(b) Figure 9 is a drawing of a eukaryotic cell.

Structure **Z** is found in plant leaf cells.

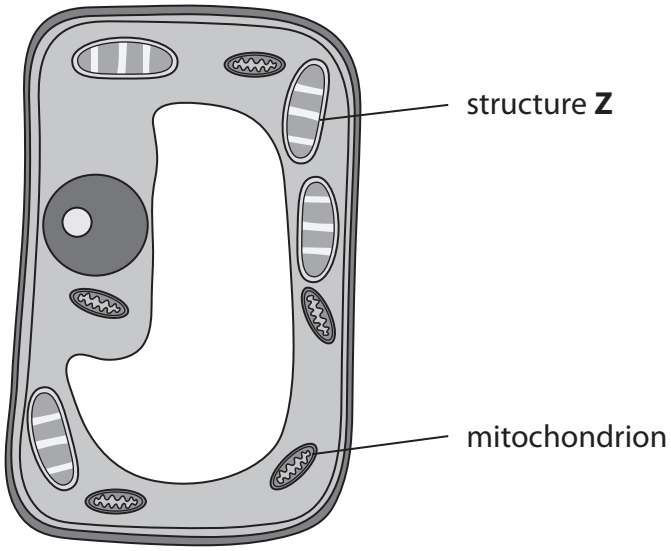

Figure 9

(i) Name structure **Z**.

(1)

.....

(ii) Give **one** function of the mitochondrion.

(1)

.....

.....

.....

*(c) DNA is found in the nucleus of cells.

Describe the structure of DNA and how it can be extracted from plant cells.

(6)

(Total for Question 6 = 13 marks)

TOTAL FOR PAPER = 60 MARKS