Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

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

Friday 10 May 2024

Morning (Time: 1 hour 10 minutes)

Paper reference **1SC0/1BF**

Combined Science

PAPER 1

Foundation Tier

You must have:
Ruler, calculator

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.*

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 7 5 5 1 0 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 a bacterial cell.

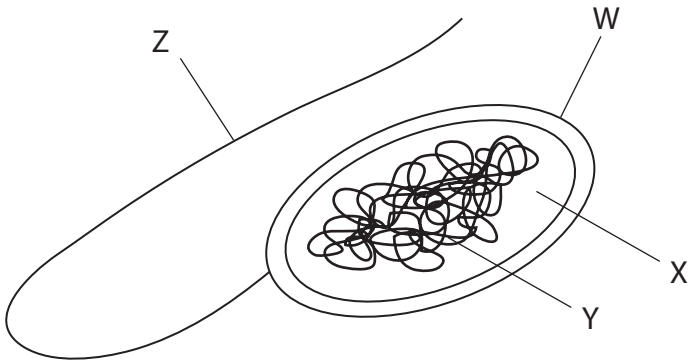

Figure 1

(i) What is structure W?

(1)

☒ **A** cell wall

☒ **B** cytoplasm

☒ **C** chromosomal DNA

☒ **D** plasmid

(ii) Give the name of structure Z.

(1)

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(iii) State the function of structure Z.

(1)

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.....

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(b) The human body has defences to protect against infection by bacteria.

Draw **one** straight line from each body defence to its function.

(2)

body defence	**function**
	moves pathogens away from the lungs
hydrochloric acid	makes antibodies
	destroys pathogens in the stomach
skin	makes antigens
	stops pathogens entering the body

(c) Smoking tobacco is a lifestyle factor that can cause disease.

Name **two** other lifestyle factors that can cause disease.

(2)

1 .....

2 .....

(Total for Question 1 = 7 marks)

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2 Figure 2 shows a method used to extract DNA from strawberries.

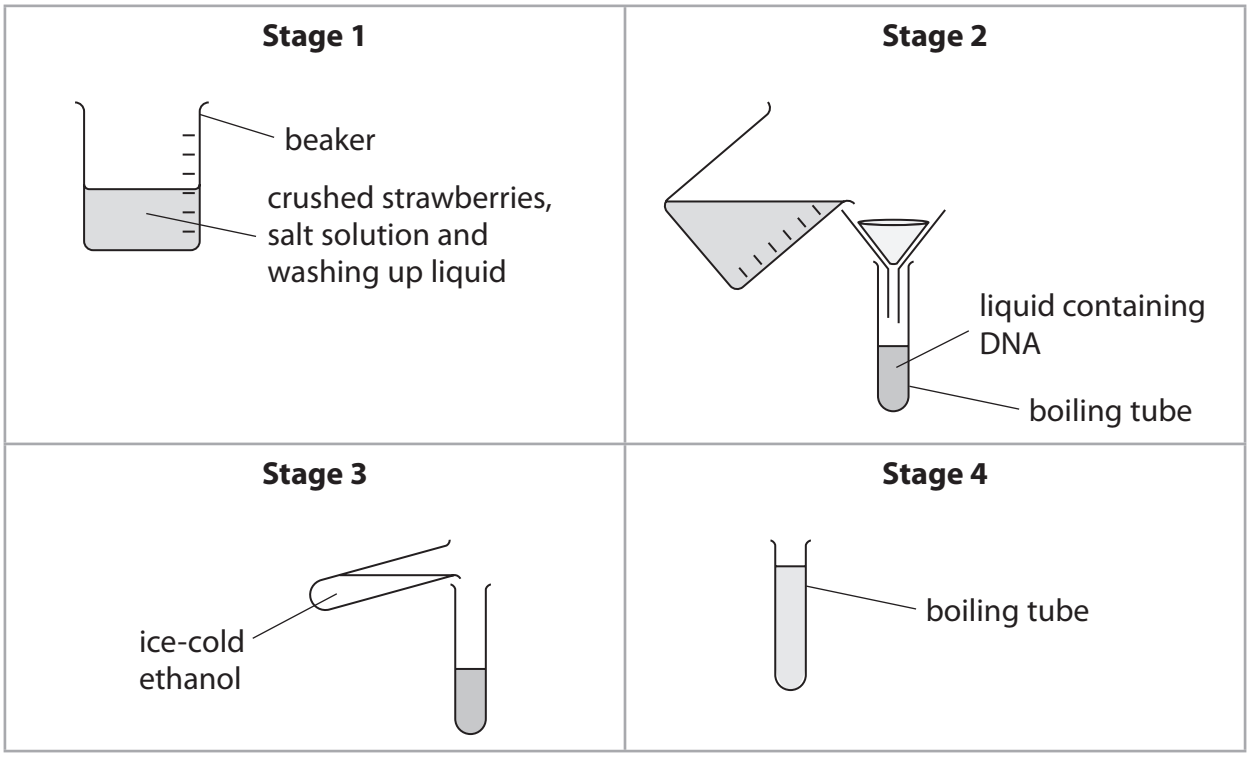

Figure 2

(a) (i) Complete the sentences using words from the box.

(2)

indicator	membranes	salt
substrates	sugar	vacuoles

Crushed strawberries are mixed with washing up liquid and

..... solution.

Washing up liquid helps to release DNA by breaking open cell

..... .

(ii) Describe the method shown in stage 2.

(2)

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(iii) What is the colour of the DNA precipitate?

(1)

- ☒ **A** blue
- ☒ **B** orange
- ☒ **C** white
- ☒ **D** red

(b) A scientist used this method to find the mass of DNA in four strawberries.

Figure 3 shows the results.

strawberry	mass of DNA in ng
1	11.8
2	6.5
3	5.9
4	1.4

Figure 3

(i) The range is the difference between the largest value and smallest value in a set of numbers.

Which is the range of these results?

(1)

- ☒ **A** 13.2
- ☒ **B** 10.4
- ☒ **C** 5.9
- ☒ **D** 5.3

(ii) Calculate the mean mass of DNA.

(1)

mean mass of DNA = ... ng

(Total for Question 2 = 7 marks)

3 Scientists think that chickens were domesticated from red junglefowl thousands of years ago.

Figure 4 shows some information about these birds.

information	red junglefowl	domesticated chicken
photograph	 (Source: © Jamil Bin Mat Isa/ Shutterstock)	 (Source: © Tsekhmister/ Shutterstock)
mass of adult in kg	0.75 to 1.2	2.5 to 3.0
number of eggs laid per year	10 to 15	250 to 300

Figure 4

(a) Describe how selective breeding has produced chickens that lay large numbers of eggs.

(3)

(b) Chickens have 78 chromosomes in each of their body cells.

These chromosomes are in pairs.

(i) Which term describes a chicken body cell?

(1)

- ☒ **A** dominant
- ☒ **B** haploid
- ☒ **C** recessive
- ☒ **D** diploid

(ii) State the number of chromosomes found in the gametes produced by chickens.

(1)

.....

(c) Complete the table to compare the production of body cells and gametes.

One box has been completed for you.

(3)

type of cell produced	type of cell division	number of daughter cells produced
body cell	mitosis	
gamete		

(d) Some animal cells are stem cells.

Describe the function of stem cells.

(2)

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(Total for Question 3 = 10 marks)

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4 (a) The common cold is caused by a virus.

(i) Give **one** reason why antibiotics are not used to treat the common cold.

(1)

.....

.....

(ii) The development of a new antibiotic has many stages.

Which is the last stage in the development of a new antibiotic?

(1)

☒ **A** preclinical testing

☒ **B** discovery

☒ **C** clinical testing

☒ **D** diagnosis

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(b) Figure 5 shows the effect of adding an antibiotic to a culture of bacteria.

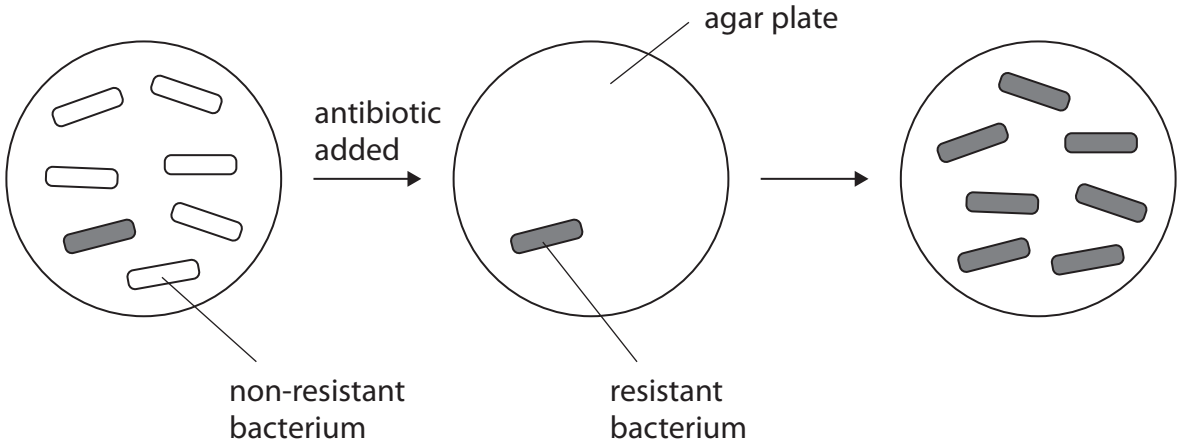

Figure 5

Explain how antibiotic-resistant bacteria have evolved.

Use information from Figure 5 in your answer.

(4)

(c) One source of evidence for human evolution is from stone tools.

Give **one** other source of evidence for human evolution.

(1)

.....

.....

(d) Figure 6 shows two stone tools.

(Source: © John Kepchar/Shutterstock)

tool A
approximately
4 000 years old

(Source: © Eduardo Estellez/ Shutterstock)

tool B
approximately
100 000 years old

Figure 6

(i) Explain how these tools provide evidence for human evolution.

(3)

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(ii) Describe **two** methods that scientists use to date stone tools.

(2)

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2 .....

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(Total for Question 4 = 12 marks)

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5 A student investigated the effect of temperature on the rate of reaction of the enzyme pepsin.

Figure 7 shows the data collected.

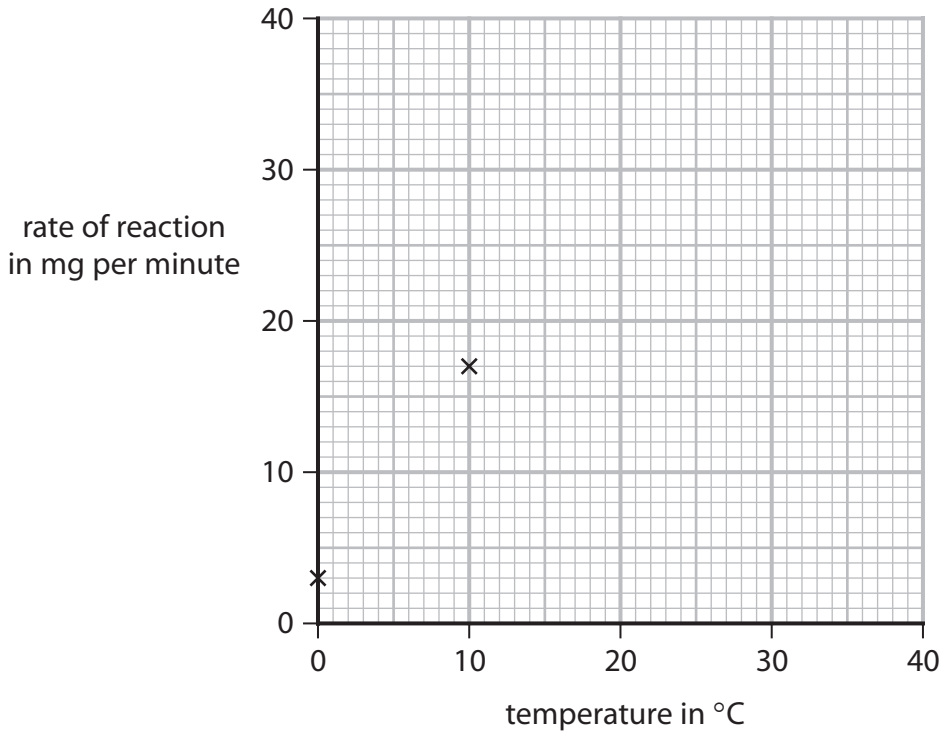
temperature in °C	rate of reaction in mg per minute
0	3.0
10	17.0
20	26.0
30	32.0
40	34.0

Figure 7

(a) Complete the graph by plotting the results shown in Figure 7 and drawing a line of best fit.

The first two points have been plotted for you.

(2)



(b) Pepsin and trypsin are enzymes that break down proteins.

Figure 8 shows the results of an investigation into the activity of pepsin and trypsin at different pH levels.

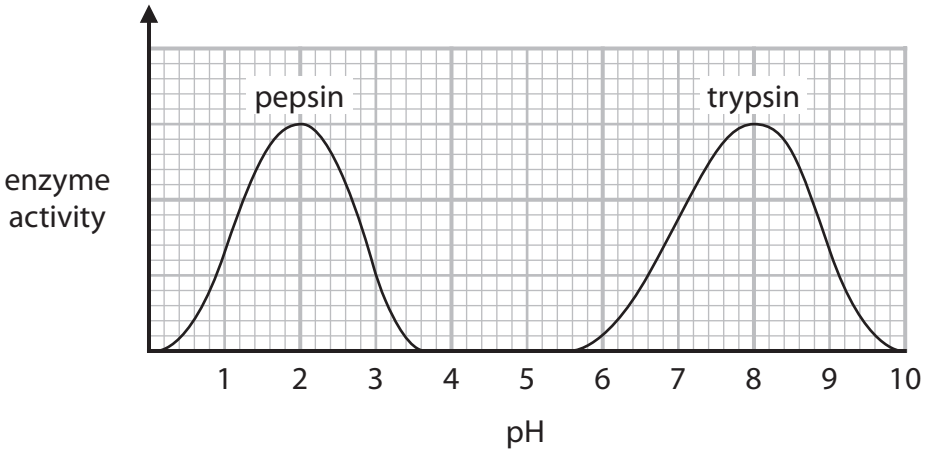


Figure 8

(i) Which molecules are produced when a protein is broken down?

(1)

- ☒ **A** sugars
- ☒ **B** amino acids
- ☒ **C** fatty acids
- ☒ **D** starches

(ii) Describe the trend in the graph for the enzyme pepsin.

Use data from the graph to support your answer.

(3)

(iii) State the optimum pH for the enzyme trypsin.

(1)

.....

(iv) Explain why there is no trypsin activity at pH 5.

(3)

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(v) Temperature is a variable that should be controlled in this investigation.

Give **one** way the temperature could be controlled.

(1)

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(Total for Question 5 = 11 marks)

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6 (a) Malaria is a disease that causes damage to the blood and liver.

(i) Which type of pathogen causes malaria?

(1)

- ☒ **A** a bacterium
- ☒ **B** a fungus
- ☒ **C** a protist
- ☒ **D** a virus

(ii) State how the pathogen that causes malaria is spread.

(1)

.....

.....

(b) Measles is a disease caused by a virus.

Figure 9 shows the number of measles cases reported in England and Wales from 1985 to 2015.

year	number of measles cases reported
1985	97 408
1995	7 447
2005	2 089
2015	1 193

Figure 9

Explain **one** conclusion that can be made about the change in the number of measles cases reported from 1985 to 2015.

(2)

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(c) Describe **two** ways the immune system will respond to an infection by a pathogen.

(2)

1 .....

.....

2 .....

.....

(d) (i) Beriberi is a disease caused by a lack of vitamin B1 in the diet.

Give **one** reason why beriberi is classed as a non-communicable disease.

(1)

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*(ii) Beriberi can affect reflexes.

Figure 10 shows a reflex arc.

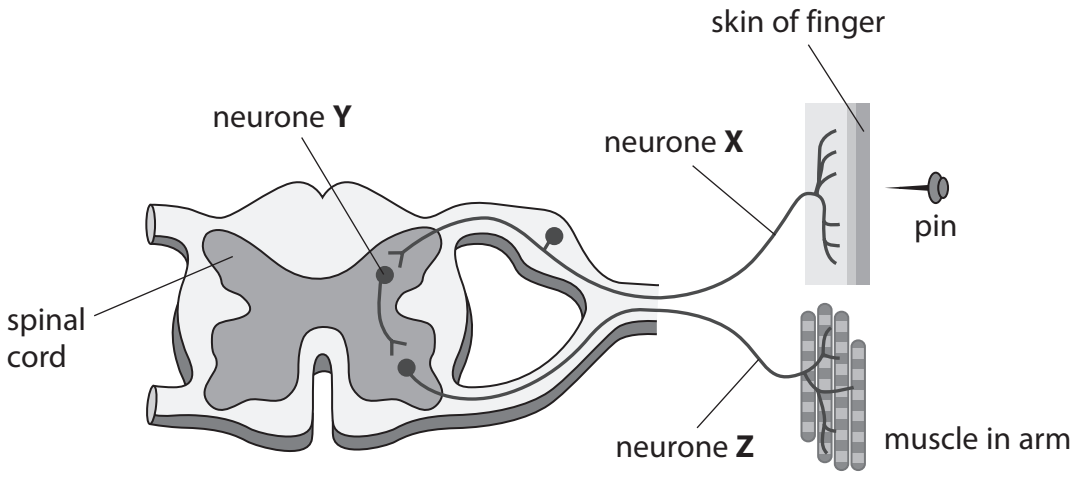

Figure 10

When the skin is pricked by a pin, electrical impulses travel through a reflex arc.

Describe the path taken by electrical impulses from the skin to the muscles in the arm.

Include the names of neurones X, Y and Z in your answer.

(6)

(Total for Question 6 = 13 marks)

TOTAL FOR PAPER = 60 MARKS

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