

AQA Biology Paper 2

1.1 a **What is a reflex?** (2 marks)

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b **Which is the correct neurone pathway in a reflex? Tick one box.** (1 mark)

| | |
|---|--------------------------|
| Sensory neurone → motor neurone → relay neurone | <input type="checkbox"/> |
| Sensory neurone → relay neurone → motor neurone | <input type="checkbox"/> |
| Motor neurone → sensory neurone → relay neurone | <input type="checkbox"/> |

1.2 a **What is the endocrine system?** (2 marks)

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b **Where in the body is oestrogen produced? Tick one box.** (1 mark)

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|-----------------|--------------------------|
| Pituitary gland | <input type="checkbox"/> |
| Ovaries | <input type="checkbox"/> |
| Testes | <input type="checkbox"/> |

c **What is the role of oestrogen in the menstrual cycle?** (2 marks)

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d **Contraceptives are used to prevent pregnancy. Which of the contraceptive methods below uses hormones? Tick one box.** (1 mark)

| | |
|----------------------|--------------------------|
| Intrauterine implant | <input type="checkbox"/> |
| Condoms | <input type="checkbox"/> |
| Diaphragm | <input type="checkbox"/> |

1.3 **Several types of contraceptive were studied to see which was the best at preventing pregnancy. The results are shown in the table below.**

| Type of contraception | Number of pregnancies per 1000 | Percentage of pregnancies prevented (%) |
|-----------------------|--------------------------------|---|
| Condoms | 30 | 97 |
| Spermicides | 40 | |
| Contraceptive pill | 1 | |
| Intrauterine device | 2 | |

- a Calculate the percentage of pregnancies prevented for each type of contraception and complete the table. (3 marks)
- b Which method of contraception is the most effective at preventing pregnancy? (1 mark)

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H c Describe what happens during in vitro fertilisation (IVF). (3 marks)

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H d Give one advantage and one disadvantage of IVF. (2 marks)

Advantage

Disadvantage

2.1 a Where in the cell is the DNA found? (1 mark)

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b How many pairs of chromosomes are in the human genome? (1 marks)

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2.2 The height of bean plants is controlled by a single gene. The allele for tall bean plants, T, is dominant to the allele for short bean plants, t.

a What is meant by the terms **recessive** and **dominant**? (2 marks)

Recessive

Dominant

b The Punnett square below shows the inheritance of alleles from two tall bean plants with the alleles, Tt.

| | | |
|---|----|----|
| | T | t |
| T | Tt | Tt |
| t | Tt | tt |

- i How many offspring will be tall? (1 mark)
- ii How many offspring will be short? (1 mark)
- iii What percentage of the offspring have the alleles, tt? (1 mark)

c The offspring with the alleles, tt, breeds with another plant with the alleles, TT.

- i What are the possible combinations of alleles? (1 mark)
- ii What are the chances that the offspring will be tall? (1 mark)

2.3 a Name the **two** scientists that proposed the theory of evolution. (2 marks)

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b Use the words in the box below to explain the process of natural selection. (3 marks)

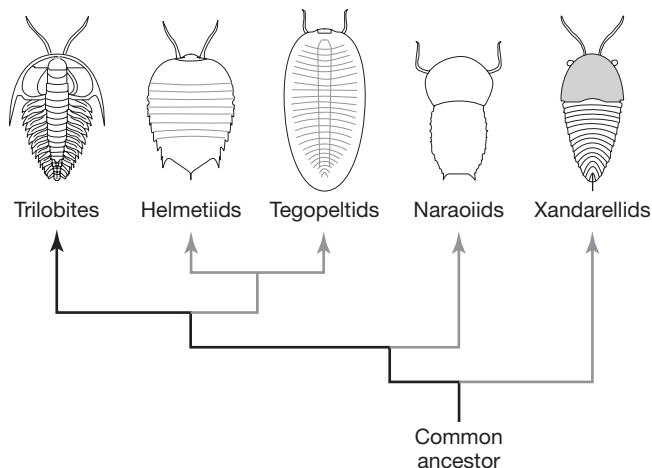
| | | |
|-----------|---------|-----------|
| variation | adapted | offspring |
|-----------|---------|-----------|

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c Fossils are evidence of evolution. The evolution tree below shows the fossils of arachnomorpha, a group of organisms that lived millions of years ago.



i What evidence from the image shows that arachnomorpha had a common ancestor? (2 marks)

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ii Which **two** species are the most closely related? (2 marks)

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2.4 a All species are classified into groups. Complete the table below to show the classification of the common toad, *Bufo bufo*. (4 marks)

| | Phylum | Class | | Family | Genus | Species |
|--------|------------|-------|-------|--------|-------|---------|
| Animal | Vertebrate | | Anura | Bufo | | bufo |

b Name another species in the same class as the common toad. (1 mark)

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c Explain why the common toad has two names. (2 marks)

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3.1 a Name **two** minerals that plants need for healthy growth. (2 marks)

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b Dead leaves from a nearby tree fall onto the soil. The carbon from the leaves is recycled through the carbon cycle. Explain how the carbon from the dead leaves is used for the growth of the carrots. (6 marks)

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3.2 In a woodland community, caterpillars (10 kg) feed on an oak tree (100 kg). The caterpillars are eaten by blackbirds (2kg), which are eaten by a sparrowhawk (1kg).

a Define the term **community**. (1 mark)

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b Draw a food chain to show the feeding behaviour of this community. (2 marks)

c Which of these organisms are primary consumers? (1 mark)

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d Which of these organisms is a producer? (1 mark)

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3.3 Some students decided to investigate the abundance of woodlice in two different woodland habitats of the same size. The first habitat was dark and damp. The second habitat was light and dry. The students used the ‘capture, mark, recapture’ method.

a How much time should the students allow before recapturing the woodlice? Justify your answer. (4 marks)

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b The students caught 80 woodlice in the dark, damp habitat and 10 woodlice in the light, dry habitat. They marked the woodlice and let them go. The students caught some woodlice on another occasion and counted how many of them were marked. The results are shown in the table below.

| Habitat | Number of woodlice caught the first time | Number of woodlice caught the second time | Number of woodlice caught the second time that are marked |
|---------------|--|---|---|
| Dark and damp | 80 | 88 | 40 |
| Light and dry | 10 | 7 | 2 |

i Estimate the number of woodlice in each habitat. (4 marks)

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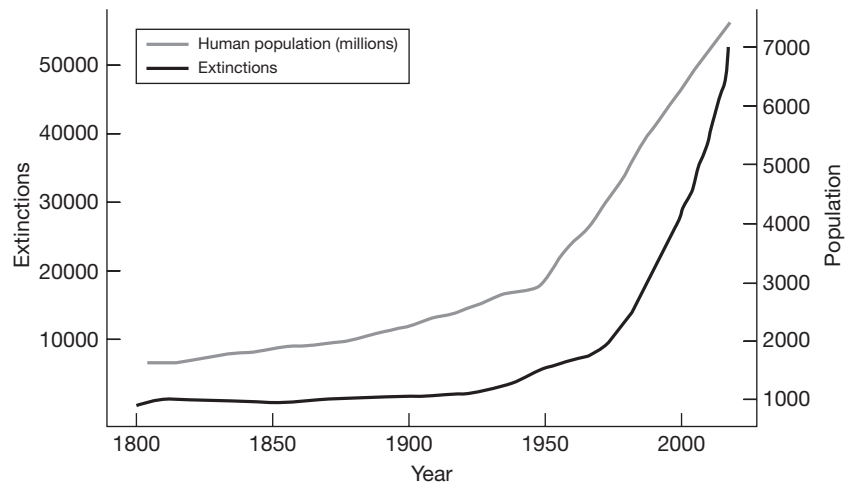
Number of woodlice in dark, damp habitat

Number of woodlice in light, dry habitat

ii Suggest why there were these number of woodlice in each area. (1 mark)

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3.4 The graph below shows the number of people on Earth (in millions) and the number of extinctions between 1800 and 2010.



a Describe the pattern of the graph. (2 marks)

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b The industrial revolution began in the 1800s. Suggest why extinctions began increasing at the same time. (5 marks)

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