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|---|---|
| **Exam Board:** | AQA |
| **Subject:** | Combined Science (Biology) |
| **Paper:** | Biology Paper 2 |
| **Marks available:** | 70 |
| **Length of paper:** | 1 hour 15 minutes |
| **Topics:** | Homeostasis & Response; Inheritance, Variation & Evolution; Ecology |

## Exam Information, guidance and hints

**Command words:**

- Complete - Fill in gaps/add labels
- Give - Recall a simple fact
- Draw - Draw a symbol, diagram or graph
- Name - Only a short answer is required, not an explanation or a description. Often it can be answered with a single word, phrase or sentence.
- Describe - Give details about an event, idea or a process
- Explain - Give reasons for an event, idea or process (use because/so)
- Compare - Identify how things are similar/different
- Suggest - Use your own knowledge in an unfamiliar context
- Plan - Write a method
- Calculate - Use numbers in a formula

**Online Resources**

- Cognito past papers

**Hints/tips:**

- If you are given the equation, ensure you are using it correctly.
- When plotting a graph make sure you are using a pencil & ruler. Be accurate when plotting the points / drawing the bars.

| Foundation Example Papers and Markschemes | | | Higher Example Papers and Markschemes | | |
|---|---|---|---|---|---|
| 2018 F Paper | Annotated P2 | 2018 MS | 2018 H paper | Annotated P2 | 2018 MS |
| 2019 F Paper | Annotated P2 | 2019 MS | 2019 H Paper | Annotated P2 | 2019 MS |
| 2020 F Paper | Annotated P2 | 2020 MS | 2020 H Paper | Annotated P2 | 2020 MS |

# PLC Biology Paper 2 - Mock 2

| Topic | Key information related to topic | Sparx Code | Resources/Information related to topic | How well do you understand this topic? RAG | | |
|---|---|---|---|---|---|---|
| | | | | Red | Amber | Green |
| Homeostasis | Define homeostasis and identify conditions that it controls | R904 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_7.01 | | | |
| Homeostasis | Explain how receptors, neurones, coordination centres and effectors are involved in homeostasis | R213 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_7.05 | | | |
| Homeostasis | **HIGHER -** Describe and explain the process of IVF to treat infertility. | R493 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_7.1 | | | |
| Homeostasis | Define metabolism and describe how it can be increased or decreased. | R434 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_3.04 | | | |
| Homeostasis | Describe and explain the differences between the nervous and endocrine systems. | R832 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_7.07 | | | |
| Homeostasis | Name the glands in the endocrine system and explain their functions. You should be able to locate them on a diagram. (pituitary gland, pancreas, thyroid, adrenal gland, ovary, testes.) | R832 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_7.07 | | | |
| Homeostasis | Describe how the body maintains a consistent blood glucose concentration<br><br>(**HIGHER - must include low blood sugar as well as high blood sugar)** | R379 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_7.03 | | | |
| Homeostasis | **HT: Explain the roles of thyroxine and adrenaline in the body** | R275 | https://www.youtube.com/watch?v=_Mts354VC7A | | | |
| Homeostasis | **HT: Explain what is meant by negative feedback including examples** | R275 | https://www.youtube.com/watch?v=_Mts354VC7A | | | |
| Homeostasis | Describe how hormones are transported around the body. | R832 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_7.07 | | | |
| Homeostasis | Identify the main glands in the body and the hormones that they produce | R832 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_7.07 | | | |

| Topic | Key information related to topic | Sparx Code | Resources/Information related to topic | How well do you understand this topic? RAG | | |
|---|---|---|---|---|---|---|
| | | | | Red | Amber | Green |
| Homeostasis | Describe type 1 and type 2 diabetes (symptoms and causes) | R841 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_7.04 | | | |
| Homeostasis | Describe the treatments for the different types of diabetes. | R841 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_7.04 | | | |
| Homeostasis | Describe a method for measuring human reaction time. Include control variables to ensure valid, reliable results. | R683 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_7.05 https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_11.08 | | | |
| Homeostasis | Identify different types of neurones and describe their function | R213 | | | | |
| Homeostasis | Describe the order in which a nervous response occurs. | R213 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_7.05 | | | |
| Homeostasis | Describe how the reflex arc works | R936 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_7.05 | | | |
| Homeostasis | Explain why the reflex arc is important | R936 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_7.05 | | | |
| Homeostasis | Explain how neurones are adapted for their function. | R841 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_7.05 | | | |
| Homeostasis | Describe the role of hormones in human reproduction. (Testosterone, oestrogen, progesterone, LH and FSH) | R651 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_7.08 | | | |
| Homeostasis | **HT: Describe the interactions between oestrogen, progesterone, LH, FSH and the female reproductive system in controlling the menstrual cycle.** | R910 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_7.08 | | | |
| Homeostasis | Identify different types of contraception (chemical and barrier) and explain how they work | R679 | https://www.youtube.com/watch?v=iXswGsfeHJg | | | |
| Homeostasis | Evaluate the use of different contraceptives | R679 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_ | | | |

| Topic | Key information related to topic | Sparx Code | Resources/Information related to topic | How well do you understand this topic? RAG | | |
|---|---|---|---|---|---|---|
| | | | | Red | Amber | Green |
| | | | 7.09 | | | |
| Homeostasis | **HT:** Explain how hormones are used to treat fertility problems (IVF) | R493 | https://www.youtube.com/watch?v=4CxNeiAICmc | | | |
| Homeostasis | **HT**: Evaluate fertility treatments | R493 | https://www.youtube.com/watch?v=4CxNeiAICmc | | | |
| Inheritance, variation and evolution | Describe the differences between asexual and sexual reproduction. | R320 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.12 | | | |
| Inheritance, variation and evolution | Name the classification groups in order of size in Linnaeus's classification system. Describe this classification system | R761 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.22 https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_1.01 | | | |
| Inheritance, variation and evolution | Describe Carl Woese's three domain classification system | R761 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.22 | | | |
| Inheritance, variation and evolution | Describe the process of mitosis | R761 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.09 | | | |
| Inheritance, variation and evolution | Describe the process of meiosis including its function | R969 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.1 | | | |
| Inheritance, variation and evolution | Compare mitosis and meiosis | R969 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.1 | | | |
| Inheritance, variation and evolution | Describe the differences between body cells and gametes. | R668 R969 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.12 | | | |
| Inheritance, variation and | Describe the structure and function of DNA | R794 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.01 | | | |

| Topic | Key information related to topic | Sparx Code | Resources/Information related to topic | How well do you understand this topic? RAG | | |
|---|---|---|---|---|---|---|
| | | | | Red | Amber | Green |
| evolution | | | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.02 | | | |
| Inheritance, variation and evolution | Describe the human genome project (include what it was and what the importance of it was) | R810 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_5.2 | | | |
| Inheritance, variation and evolution | Explain the risks and benefits of of GM crops and genetic modification in medicine. | R801<br>R609 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_9.01 | | | |
| Inheritance, variation and evolution | Describe genetic engineering (**HT also must be able to describe the stages in genetic engineering)** | R801<br>R805<br>**(R609)** | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_9.01 | | | |
| Inheritance, variation and evolution | Define key inheritance vocabulary such as gamete, chromosome, gene, genotype, phenotype, allele, homozygous, heterozygous, dominant and recessive. | R216 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.02 | | | |
| Inheritance, variation and evolution | Use genetic diagrams to draw and complete a punnett square diagram including showing the probability for a particular genotype or phenotype | R249<br>R933<br>R431 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.14 | | | |
| Inheritance, variation and evolution | Use punnett squares to show how sex is determined from X and Y chromosomes | R431 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.14 | | | |
| Inheritance, variation and evolution | **Higher -** Describe how a mutation during protein synthesis can result in enzymes that do not function correctly. | R909<br>R295 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.04<br>https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.05 | | | |
| Inheritance, variation and evolution | Describe inherited disorders such as cystic fibrosis and polydactyly | R431 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.16 | | | |
| Inheritance, | Compare the arguments for and against | R249 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_ | | | |

| Topic | Key information related to topic | Sparx Code | Resources/Information related to topic | How well do you understand this topic? RAG | | |
|---|---|---|---|---|---|---|
| | | | | Red | Amber | Green |
| variation and evolution | embryonic screening. | | 8.16 | | | |
| Inheritance, variation and evolution | Describe the differences between inherited characteristics, environmental characteristics and characteristics controlled by a mixture of both. Include examples of each. | R249 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.06 | | | |
| Inheritance, variation and evolution | Explain the importance of mutations in genetic variation | R909 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.06 | | | |
| Inheritance, variation and evolution | Explain how to determine the most recent common ancestor or the most distant relative of a species using an evolutionary tree. | R761 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.22 | | | |
| Inheritance, variation and evolution | Name the scientists who developed the theory of evolution by natural selection and describe the theory. | R909<br>R157<br>R738 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.05<br>https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.07<br>https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.06 | | | |
| Inheritance, variation and evolution | Describe the theory of evolution by natural selection and use it to explain specific examples of evolution | R738 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.06 | | | |
| Inheritance, variation and evolution | Describe the process of selective breeding | R754 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.18 | | | |
| Inheritance, variation and evolution | Evaluate the use of selective breeding | R754 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.18 | | | |
| Inheritance, variation and | State the reasons that a species may become extinct. | R294<br>R719 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.19 | | | |

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|---|---|---|---|---|---|---|
| | | | | Red | Amber | Green |
| evolution | | | | | | |
| Inheritance, variation and evolution | Describe how fossil evidence can be used to provide evidence for evolution | R719 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_8.19 | | | |
| Inheritance, variation and evolution | Explain how fossils form, including why some organisms do not form fossils | R719 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.19 | | | |
| Inheritance, variation and evolution | Explain why there are gaps in the fossil record | R719 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.19 | | | |
| Inheritance, variation and evolution | Explain how antibiotic resistant bacteria develop | R175 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.23 | | | |
| Inheritance, variation and evolution | Describe advice for and from doctors to prevent the spread of antibiotic resistant bacteria | R175 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.23 | | | |
| Ecology | Draw a food chain and food webs | R618 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_10.04 | | | |
| Ecology | Describe the interdependence of organisms in an ecosystem including predator/prey and competition | R226 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.02 | | | |
| Ecology | Describe how interdependence is linked to food, shelter, seed dispersal and pollination and what would happen if the stable community is disrupted | R226 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.02 | | | |
| Ecology | Describe biotic factors including examples | R656 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.03 | | | |
| Ecology | Describe abiotic factors including examples | R173 | | | | |

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|---|---|---|---|---|---|---|
| | | | | Red | Amber | Green |
| Ecology | Describe how organisms are adapted to their environment | R453 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.03 | | | |
| Ecology | Define extremophile and give examples | R453 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_8.21 | | | |
| Ecology | Describe how to calculate a population estimate using quadrats. | R347<br>R355 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_10.07<br>https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_11.1 | | | |
| Ecology | Describe how to ensure quadrats are placed randomly when estimating population. | R355 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_11.1 | | | |
| Ecology | Name and describe different types of pollution. | R604 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_10.13 | | | |
| Ecology | Describe and explain the effects of climate change | R325 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_10.17 | | | |
| Ecology | Define key organisation of an ecosystem vocabulary such as: ecosystem, community, population, producers, consumers, decomposers, prey and predator | R504 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_10.02 | | | |
| Ecology | Describe the different ways in which predator species can be important in ecosystem stability. | R226 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_10.02 | | | |
| Ecology | Describe the process of eutrophication and explain its impacts on the environment. | R604 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-h-t_10.13 | | | |
| Ecology | Describe the carbon cycle and explain its importance for life on Earth | R824 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.09 | | | |
| Ecology | Describe the water cycle and explain its importance for life on Earth | R153 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.09 | | | |
| Ecology | Define biodiversity | R748 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.14 | | | |

| Topic | Key information related to topic | Sparx Code | Resources/Information related to topic | How well do you understand this topic? RAG | | |
|---|---|---|---|---|---|---|
| | | | | Red | Amber | Green |
| Ecology | Explain positive and negative ways that humans can impact biodiversity | R124 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.14 | | | |
| Ecology | Explain the impact of deforestation on ecosystems | R604 R975 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.19 | | | |
| Ecology | Explain the impact of global warming on ecosystems | R325 | https://cognitoedu.org/coursesubtopic/b2-gcse-aqa-f-c_10.13 | | | |
| Scientific Skills | Identify variables in experiments | X | https://www.youtube.com/watch?v=nKbUbfadxRU | | | |
| Scientific Skills | Describe relationships shown in graphs | X | https://www.youtube.com/watch?v=OzDUYj6nNCA | | | |
| Scientific Skills | Calculate mean, median and mode | X | https://www.youtube.com/watch?v=nYScfgOdz_A | | | |