The A-level Biology essay

Ariadne Baker

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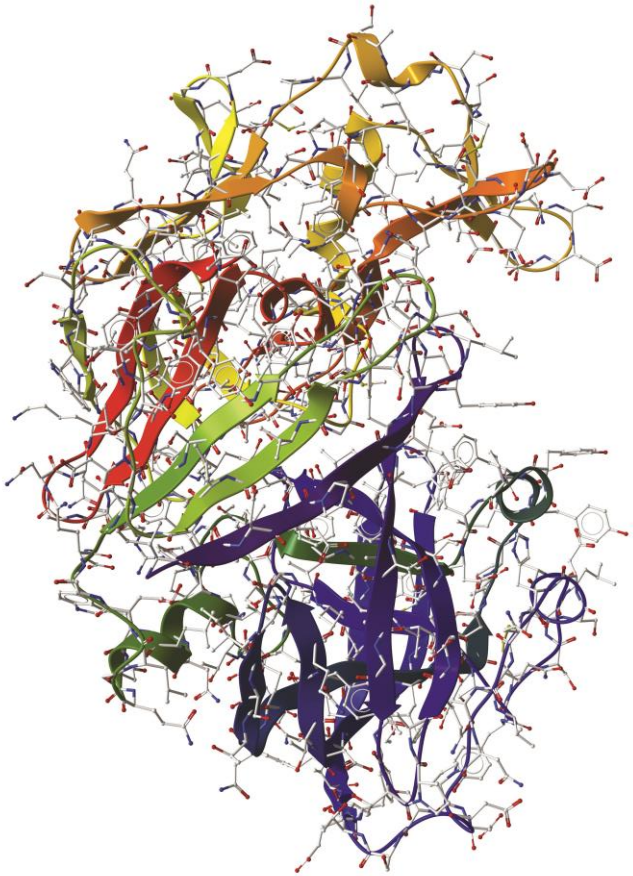

The essay is a synoptic exercise

- As with the legacy specification BIOL5 paper, Paper 3 has a **free response essay** addressing a theme in a title, with **a choice from two titles**.
- The essay is designed to assess whether students can bring together material from a range of topics to **illustrate and explain an important concept or idea**.
- The essay is not just a memory test of what a student knows – it is also a test of whether they have some **understanding** of what they have learnt and can **apply** what they know.
- Marks are about equal for both aspects – average to lower marks tend to be where students focus mainly on AO1 rather than AO2.

What we expect from students in the essay

- To **identify an underlying theme or idea** in an essay title – it will be a 'big idea', not a minor topic.
- To select five or six **different examples** that they can use to illustrate the theme or idea.
- To write a reasonable paragraph about each example (using appropriate A-level terminology), **pointing out how it illustrates the theme or idea.**

What the essay is not

- ‘Think of every possible thing that relates to the title and write as much as you can about it, with no thought of the main theme/idea.’
  - This would make it just a memory test (AO1).

- ‘Write at a very high level (above A-level) about one or two topics.’
  - This is not a synoptic approach. We do not wish to encourage learning of rote answers involving one or two important topics which might apply to many titles – eg respiration.

The content of essay responses

Content has to be of A-level standard to score highly – this includes scientific terminology and the explanation of 'importance'.

- Example – importance of gas exchange in humans – many students gave reasonable degrees of detail about gas exchange in the lungs. Most then said this was important 'to stay alive', or 'for respiration' – not A-level standard.

- Strongest responses linked oxygen uptake to oxidative phosphorylation in respiration, as a source of most of the ATP the body requires.

- Or to prevent increase in concentration of carbon dioxide in blood – leading to fall in pH and adverse effects on eg enzymes.

Levels mark scheme

- The statements in the levels mark scheme are based on the descriptors for the essay in the previous specification.
- The expectation was that the outcomes would be very similar to those for the essay in BIOL5 – this proved to be the case.
- This year, the mean mark for the essay was 14.1 and the SD 5.0 – both slightly higher than for 2016 BIOL5.
- The discrimination index was 0.52 – equal highest on the paper and (historically) high for any question on a Biology paper – this means that there is strong correlation between performance on the essay and performance on the paper as a whole.

Levels mark scheme

- A commentary has been produced that gives further clarification of some of the statements in the levels mark scheme – in booklet.
- This summer's paper was standardised face-to-face, to give the same information to examiners.
- Note the important impacts of significant errors and irrelevant passages.
- Without these, content has to be sufficiently good to qualify for a given level.

Advice for the essay

- Any plan is purely for the student's use.
- **The essay is a prose exercise** – unless a plan is written as a series of sentences (ie as an essay), it won't add to the mark for the essay. The same applies to diagrams/drawings – they would have to be very heavily annotated to count.
- **No introduction or conclusion is required** – it wastes time that could be used for more content.
- Content from 'several' topic areas is required – **we have defined four topics as the minimum for 'several'** – five or six might be safer, since the amount of A-level content in the essay affects the level.

Advice for the essay

- The levels scheme states that **more than two A-level topics need to be addressed to get higher than 10 marks.**
- **A minimum of four topics is required to get higher than 15 marks**.
- A topic area is a numbered sub-section in the specification.
  - For example, for the 2017 'diffusion' essay, gas exchange (3.3.2) was a topic area.
    - A few students wrote almost entire essays about different gas exchange systems – this made their essay 'unistructural', with a maximum of 6 to 10 marks.

Advice for the essay

- It might be possible to construct an essay around a single example – but not required.
- A-level detail is required – though not necessarily all the detail of a particular topic, just the **relevant detail**.
- **A-level terminology is required and more important than grammar** – this is an exercise concerned with biology, not English.

Advice for the essay

- An essay containing **only GCSE-level material can score a maximum of 5 marks.**

- If asked about the importance of something, **factual detail and explanation of importance have to be at A-level standard to score above 15 marks**.

- **An example not from the specification has to be at (or above) A-level standard** – not GCSE, or what anyone who hasn't studied A-level Biology would know.
  - This example is only essential if a student is aiming for top marks ie 24/25 out of 25 – students can still score 23 out of 25 without examples not from the specification.
  - Example – quite a few students made reference to cystic fibrosis in essays about diffusion – relatively few made accurate links to this condition and chloride ion channel protein, diffusion and/or water potentials and osmosis.

Sample essays

Three essays with annotations – ten available from 2014 on website.

Four 2017 essays available with feedback materials on e-AQA soon.

Familiarise yourself with the levels mark scheme.

Read the essays and look for the following:

- Are they using A-level content and terminology?
- Do they address the biological importance of what they write about – and at what level – is it A-level?
- Are there significant errors – things that are biologically wrong and greatly affect the sense of what they are trying to say?
- Are there passages that are not relevant – or that they do not make relevant?

Preparing students for the essay

- **Practice!** Could start at AS, with titles that address 'big ideas' in sections.
- When teaching, point out **connections** between parts of the specification.
  - Especially through the 'big ideas' outlined at the start of each section.
- Encourage **outside reading** – eg *Biological science review* – which will help them to put what they learn into broader contexts. To get a top mark (24 or 25) in the essay, we will look for some evidence (at least in one topic) of reading beyond the specification.
- Example – Membranes are important in many processes in cells.
  - What could be the theme of the essay?
  - What might be suitable topic areas?

Preparing students for the essay

- **Theme/idea** – the **role** of membranes in processes – **not just processes** that involve membranes.

- Suitable topics include transport across membranes, protein synthesis, immune response, exchange surfaces, photosynthesis, respiration, receptors (in various topics such as insulin action), neurones, synapses, muscle contraction…

Preparing students for the essay

Example – photosynthesis.

- Weaker answers will focus on all of photosynthesis – as a process involving membranes – perhaps mention membranes in chloroplasts (this approach would gain a maximum of about 18 out of 25).

- Good answers will focus on thylakoid membranes in the chloroplast and the roles of components of these membranes in holding pigments, components of the electron transfer chain, ATP synthase and the membrane as a barrier allowing maintenance of a proton gradient – and, perhaps, role of membranes in maintaining the special chemical environment inside chloroplasts.

Preparing students for the essay

- At the end of each topic, make links to other topics to encourage answers to the essay question become more synoptic.
- Regularly give students an essay title. Ask them to list the topics that could be written about for that title.
- Draw mind maps with students showing the topics that could be linked to an essay title and the links between them.
- At the end of each teaching each topic, give a series of essay titles and ask students to write a paragraph on the topic and how it links to that title.
- Students write essays and peer-assess each others' work.
- Remember students should include five/six topics in the essay and the essay should take about 40 minutes to write.

How did we do?

- Please rate this session on the **Sched Conference app**.

- Using the post-its provided, please write:
  - one thing you enjoyed about our session or will take away for your teaching
  - one thing you feel could be improved.
- Stick these on the feedback poster as you leave.

Get in touch

Contact us
aqa.org.uk/contact-us

Customer Support Team
01483 477756
alevelscience@aqa.org.uk

Events Team
0161 696 5994
events@aqa.org.uk
aqa.org.uk/professional-development

Thank you