How to Ace an Exam Question

The PS-SEX Method:

PARSE–SKETCHES–SUBHEADINGS–EXAMPLES–EXTERNAL MATERIAL

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1. PARSE

   Before you start, parse the question. It is imperative to answer all parts of the question, and for the marker to be able to see that you have done that. Therefore, use the different sub-parts as sub-headings in your answer.

   This approach will help you to cover all parts of the question, and also to give your answer structure, so it is not just a stream of muddled facts.

   Example: *Explain the concepts of data being consistent with a hypothesis, requiring it, and ruling it out. Illustrate by taking as an example the origin of Earth's magnetic field.*

   The answer to this question could be structured as follows:

   1. Data being consistent with a hypothesis:

   …blah blah saying what this means…
   Example: (could be one from outside of the Dynamic Earth course)
   Sketch

   2. Data requiring a hypothesis:

   …blah blah saying what this means…
   Example: (could be one from outside of the Dynamic Earth course)
   Sketch

   3. Data ruling a hypothesis out:

   …blah blah saying what this means…
   Example: (could be one from outside of the Dynamic Earth course)
   Sketch

   4. Illustration using the example of the origin of Earth's magnetic field

   …blah blah consistent with…
   …blah blah requiring…
   …blah blah ruling out…
   Example:
   Sketch

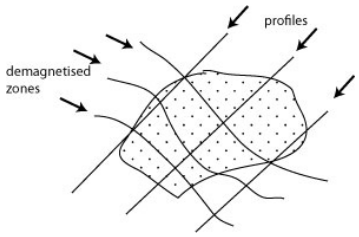
This approach will help you to avoid writing irrelevant or substanceless waffle, *e.g.*, "*It is very important to understand the concepts of data being consistent with a hypothesis, requiring it,*

and ruling it out because unless these issues are thought about carefully before drawing scientific conclusions the results will not be dependable."

Prose of this sort wastes your valuable time and will gain you no marks because it does not directly answer the question. In scientific exam answers the marker is looking for evidence of *knowledge* (i.e. facts), and *understanding*. We are not looking for a touchy-feely magazine article with a nice little introduction and summary.

2. SKETCHES

Include sketches, however small and simple. One per page is a good target. e.g.:



They do not have to be elaborate! Just a few strokes of the pen are better than nothing.

3. SUBHEADINGS, SUB-SUBHEADINGS…

Use subheadings, highlighter pens, underlining, 1) numbering, •bullet points – ANYTHING that divides up the answer into blocks and highlights for the marker the critical elements.

Example: Earth's magnetic field arises from three sources:

1. the ionosphere,
2. geological bodies, and
3. convection in the liquid outer core.

4. EXAMPLES

Give examples, and not just general ones – briefly mention specific examples. The examples you quote are a good way of getting in material that demonstrates knowledge from outside the course, in particular the independent reading that is required in order to get a first-class mark.

5. EXTERNAL MATERIAL

Evidence for research/reading outside of the taught course is essential to get you a first-class mark. Even if you can't score so high on a particular question, demonstrating linkage across

courses, and/or external reading will get you extra marks.

No specific material from any other course will be required in the exam, but some evidence that there is more in your heads than just what we taught in our 20 x 2-hr classes in the Michaelmas Term is required for top marks.

As you organize your work and lecture notes, and revise for the exams, add a few notes on some small element of personal/external material to every block of work in your courses. Be ready to cite this in exam question answers.

Additional tips

1. Include references if possible, even if you cannot remember the correct date, e.g., *The plume hypothesis was originally proposed by Jason Morgan*. You should be familiar with your lecturers' own key areas of expertise, publications, and books. Durham University promotes "research-led teaching", so the staff naturally draw on their own research work to enrich their teaching.

2. Pay significant attention to any "end bits" of questions. For example, in the question:

   For subduction zone magmas:

   a) List the potential sources of material that contribute to subduction zone magmas.
   b) Outline the trace element and isotope evidence for the presence of sediments and altered oceanic crust in subduction zone magmas.
   c) Draw a cross-section through a subduction zone illustrating the thermal structure and the depth of melting.
   d) Outline the problem of melting in the subduction zone environment, and describe how melting is thought to occur (referring to the evidence in parts a, b and c of this question).

Be sure to "refer to the evidence in parts a, b and c of this question", because you can count on a significant percentage of the marks being allocated to that element.

3. Include critical comment, including attention to problems, errors, and how to address or handle them.

Example question from 2012

What is the definition of a "large igneous province" (LIP)? Do igneous provinces on Earth's surface fall naturally into LIP and non-LIP categories? Has this classification system resulted in new advances in understanding of igneous activity, and if so, what?

University of Durham

EXAMINATION PAPER

	date	exam code
	May/June 2012	0 5 3 0 1 1 / 0 1

description

Dynamic Earth I

Time allowed: 2 hours

Examination material provided: Answer sheet for Section A.

Additional Materials Permitted:

YOU ARE PERMITTED TO USE ONLY FOUR MODELS OF CALCULATOR (CASIO FX83ES, FX85ES, FX-83GTPLUS AND FX-85GTPLUS)

Instructions: The answers to **Section A** are to be written in the accompanying answer sheet. Answer **ALL** questions in **Section A** and **TWO** questions from **Section B**.

CANDIDATES ARE REMINDED OF THE NECESSITY OF USING RELEVANT DIAGRAMS.

Section A. Answer **ALL** questions. Recommended time 30 minutes.

Complete all the questions in the accompanying booklet.
Ensure that you include this booklet with your main answer book.

Section B. Answer **TWO** questions. Recommended time **90** minutes.

2. Explain the concepts of data being *consistent with* a hypothesis, *requiring it*, and *ruling it out*. Illustrate by taking as an example the origin of Earth's magnetic field.

3. What is the definition of a "large igneous province" (LIP)? Do igneous provinces on Earth's surface fall naturally into LIP and non-LIP categories? Has this classification system resulted in new advances in understanding of igneous activity, and if so, what?

4. For subduction zone magmas:
a) List the potential sources of material that contribute to subduction zone magmas.
b) Outline the trace element and isotope evidence for the presence of sediments and altered oceanic crust in subduction zone magmas.
c) Draw a cross-section through a subduction zone illustrating the thermal structure and the depth of melting.
d) Outline the problem of melting in the subduction zone environment, and describe how melting is thought to occur (referring to the evidence in parts a, b and c of this question).

5. Discuss, with reference to present-day examples, the extent to which deformation of continental lithosphere may be described by a continuum approach.

6. Explain, giving examples for extensional basins, how elastic interactions between normal faults in the seismogenic crust can give rise to strain localization and ultimately continental break-up.

END

University of Durham

May 2012

EARTH SCIENCES
Dynamic Earth I

Section A

Examination Candidate Code

_____

Write your examination candidate code number on the line above.

Ensure that you include this booklet in your main answer book.

1. Answer **ALL** questions. Recommended time **30** minutes.

(a) What is the D" layer and why is it called by this name?

(b) For mantle rocks at constant pressure, list the THREE physical effects that cause their seismic wave speeds to vary, in order of the size of their effects on seismic wave speed.

Continued

(c) Outline **TWO** potential solutions to the "excess siderophile problem" of the Earth's mantle (that is, the observation that the siderophile element abundances in Earth's mantle are higher than expected).

(d) Explain the relationship between mantle potential temperature, the mean extent of mantle melting (% of melt produced), crustal thickness and axial ridge depth at present-day Mid-Ocean Ridges.

Continued

(e) Give **THREE** reasons for the differences in deformation patterns between continental and oceanic lithosphere.

END