Environmental systems and societies SL

Contents

Grade boundaries

This DP/CP M21 subject report contains overall subject boundaries only, unlike previous reports where component boundaries were also published, component boundaries for this session are available in IBIS. The IB advises schools not to use component boundaries for this session as direct indicators of academic standards for future exam preparation because they have been set in response to the particular needs of the M21 cohort. Two significant conditions which do not normally feature in grade boundary setting have had to be satisfied during the boundary setting for the M21 session; the need to apply reasonable standards to adjusted assessment models for students who have restricted access to learning during the COVID pandemic and the need to maintain parity with students who undertook the non-examination route.

Standard level overall

Grade:	1	2	3	4	5	6	7
Mark range:	0-9	10-19	20-29	30-40	41-51	52-61	62-100

Standard level internal assessment

The range and suitability of the work submitted

This session, there were more reports on aspects of lockdowns and Covid and several on Covid and health links that had more of a biology focus than ESS. Some scripts were in a literature review or essay format; these do not match the assessment criteria. There were also more survey and secondary data reports and several lab investigations that were carried out either in school or at home.

The labs were generally on acidity, salinity and germination/growth experiments with some other chemical added. Some of these labs were excellent, e.g. having 5 IV treatments, sometimes also a control, and at least 5 repeats/set-ups. In contrast, the weakest hands-on experiments involved very few trials with little thought regarding the experimental set up. For example, small groups of plants were sprouted in a closet in tiny cups in order to see the effect of varying UV light intensity on the height of the plants. The student had not considered that the plants would not thrive in the dark conditions and in the small amount of space provided.

Unsurprisingly, there were fewer field work investigations than usual. There were more mixed investigations using simulations with surveys or surveys and secondary data. Some close-to-home field work combined with secondary data or surveys was also seen. Overall, there were more creative and innovative investigations than normal.

Many survey investigations put their survey questions and primary data in an appendix. Students need to give careful thought to the questions they ask, avoiding leading questions and how they will process the results of their survey to answer their research question (RQ). They also continue to present a smorgasbord of pie charts generated by Google forms/the survey tool as raw data. They should be reminded that an environmental value system is not an environmental issue (EI). There were a large number of surveys based on "age-impacting EVS" or "gender-impacting EVS"; this needs to be linked to an EI such as plastic pollution.

The RQ for many secondary data investigations was too broad, e.g. "*Gross domestic product per capita on CO_2 levels*" or *"Level of development and air quality index"*. Teacher guidance is required on the selection of reliable sources and/or database, the cross-checking of data from different sources, and the manipulation of data, not just re-using the tables/graphs from the site. These skills can be taught before the IA investigation is chosen.

Many reports contained the method and evaluation in table format and were over the word limit; the words used for describing the method and evaluation will be counted whether or not they are in tables. Analysis of secondary data and survey data is still weakly done and often poorly understood. However, slightly more students are carrying out a t-test or Chi squared test correctly and expanding on the results in the analysis/conclusion.

Candidate performance against each criterion

Identifying the context

Many reports started with an excellent context section. In the strongest reports the justification for the variables mentioned in the RQ were clearly articulated. The best responses used secondary sources to put their EI into a context by providing data to show why it is an issue (such as percentage of soils impacted by salinisation in the local area, along with the reductions in yield per hectare).

Some students still do not clearly state a RQ or identify their EI. The link between the between the variables in their RQ and the premise of the investigation with regard to the EI is normally the weaker

strand of this section. Most commonly, students state the link but fail to explain it. Some students treat CXT like personal engagement for a biology IA. Many give background information but no connections.

In some cases, the EI was not actually correct, or the RQ, EI and IV did not match. This was common in the case of IAs involving air pollution. Students confused IR with UV; carbon dioxide with sulphur dioxide or CFCs; acid rain and then took measurements with a carbon dioxide probe.

Planning

Generally, the planning section was done well, only a few reports had little to no plan; these tended to be very weak investigations overall. Weaker reports lacked justification of their sampling strategy; the conditions/treatments for the IV; repetitions of the variables, e.g. a plant is not going to grow with 20% salinity, or copper sulphate solutions which are 10–100 times higher than any observed in nature, or using a solution of pH 2 when the local area has precipitation which is pH 4. Students must undertake some initial research into other studies and the local area, to determine what concentrations are appropriate for use.

Secondary data collection commonly did not provide enough data points to apply appropriate statistical methods. Repeatability was a greater problem with secondary data; often sources were omitted completely or if given, did not provide sufficient detail to allow retrieval of the same data. Guidance on data mining should be in the method. Ethical considerations for surveys or field work still commonly omit risks to themselves as an individual when travelling, working outdoors or speaking with strangers.

In surveys, questions (and their justification) are commonly missing. Students rarely planned how they would ensure sufficient responses for each category or how the different categories would be targeted, simply stating, "sent out via social media". Such methods are not repeatable. For the surveys, there were many long descriptions of how to create a survey using, e.g. Google forms, rather than justifying the questions being asked, what information each question will provide and how it relates to the RQ. When referring to plants, students commonly state 'growth' but do not define what growth they are measuring, e.g. length, number of fruits, number/size of leaves, etc.

Results, analysis and conclusion

Students generally constructed appropriate raw data tables with correct labelling of the tables and the cells. Raw data is still sometimes omitted (or given in appendices).

Some students graph raw data, which is inappropriate. There were several simple mistakes, including poor labelling of axes, choosing the wrong type of graph to represent data, so trends and patterns cannot be seen clearly. The graphing of standard deviation in a separate graph is still occurring, this should be included as error bars on the processed data graph.

Students used more statistical analysis this year, although not always correctly. There were more t-tests and ANOVA tests than before. Standard deviation (SD) was often carried out on a sample set that was too small.

Suitable processing was present in many reports, but the interpretation of processing can still be a weakness. For example, calculating SD and error bars but not referring to it; confusing r^2 and r in correlations; overconfidence in significance of results from ANOVA. Students generally do well at writing a conclusion that is consistent with their data. Stronger conclusions considered uncertainty and reliability of the data.

The reader should be able to generate the same calculations as the student, starting from the raw data. Moderators and teachers do this to check accuracy, so the formula used and the raw data needs to be visible in the body of the report. If a mistake is made, and this can be seen clearly, then error carried forward can be applied to the analysis and conclusion. Teachers need to spot check calculations for accuracy.

Discussion and evaluation

Most of what was written in the last two subject reports still applies. Students do not seem to pay as much attention to this criterion, which is worth as many marks as the CXT, PLA and RAC.
Many discussions were short and limited in scope and did not link their findings to the EI they were investigating. Students commonly addressed the hypothesis or RQ, but there must be some evaluation of the conclusion in relation to the EI.

Evaluations of the investigation generally focused on areas of weakness and many did not give suitable modifications or areas for further research. The table format used by many students does not encourage them to write evaluations in any detail, making them identified/descriptive rather than discussed.

Weaknesses that undermine the validity of the investigation (e.g. assumptions, design) are always more significant than random errors or human errors, but most reports concentrate on the latter two error types. Many candidates list the confirmation of their hypothesis as one of the strengths of their work.

Applications

Most of what was written in the last two reports applies. The criterion is reasonably well understood by students, and most solutions are applicable. Candidates commonly only justify a solution, rather than evaluating the proposed solution/application. A variety of possible solutions rather than one solution is often presented, each with a limited evaluation of the feasibility of their application, which is less likely to achieve full marks.

Many superficial applications were stated, or the application was not appropriate to the EI. Non-specific applications such as "raising awareness", "change government policy" or "use social media" were common. Too many students continue to believe that this section is about describing how their investigation can help the EI (as opposed to providing a solution to the EI).

Communication

Examiners saw more appendices this year and more scripts stating they are above the word limit. A few were well under the suggested minimum of 1500 words. In general, IA reports were well formatted. There has been an improvement in the use of subject specific terminology, although some reports are too chatty or use emotive language. Students should organise the report, and use a consistent referencing format, including a bibliography to make the report coherent.

There is uncertainty as to what should be included in the word limit. The word count does not include: data tables, processing and presentation of the processed data, structural headings, figure titles, referencing and a bibliography. Any other element that forms part of the aspects of the criteria is counted. If an evaluation or part of the method is in a table format, then the words are still counted.

The structure of the data and figures commonly lack clarity, for example, labels on graph axes, incomplete titles for tables and graphs, different numbers of decimals of values in data tables, and inappropriate units (e.g. imperial units) are used.

The report should always be uploaded in colour to allow the graphs to be viewed clearly.

Recommendations and guidance for the teaching of future candidates

- Teachers should comment on a first draft report and allow students time to act on the advice given.
- Appendices are not read, material in an appendix is not considered during marking/moderation.
- Descriptive essays are not appropriate for the ESS IA criteria.
- Students should consider their EI first, before deciding on a RQ. This should help them to focus the RQ and make it relevant.
- Teachers should encourage their students to do background research for the introduction section, and students should verify that claims made in their EI are supported with evidence.

- Surveys are becoming more popular. Students should be guided and allowed to practice how to structure a good RQ for a survey.
- Teachers should encourage students to write survey questions that can be quantified so that the data can be processed in meaningful ways, see the guidance in the November 2020 subject report. Simply using Google sheets to make pie charts will not result in a thorough analysis.
- Working with the math department or gaining sufficient knowledge of statistics, e.g. correlation, would aid in supporting the students in using statistical techniques appropriately in their reports.
- Please cross-check all calculations for accuracy.
- Remind students that one plausible application is required with supporting thoughts regarding the benefits as well as challenges in implementing it.
- Students who carry out local fieldwork tend to have excellent procedures and evaluations. Site choice/sample location must be justified.
- Teach students how to cite references correctly within the text and to create an appropriate bibliography. It is a skill they will need for higher education studies and to avoid concerns about academic misconduct.
- Use My IB for support: the Teacher Support Material has examples and comments by the moderators. View and ask questions in the Programme Resource Communities when in doubt.

Further comments

- Extra guidance on statistics: standard deviation (SD) guidance for fewer than 5 data points in the mean:
  2–4 data points for SD use a different multiple factor (huge error bars); this can be found online or ask the math department for help.
  Suggestions:
  - Fewer than 5 points means a great deal of variability for SD. This means that the calculated SD is a poor estimator of the data spread showing bias and high variance, but that is to be expected with so little data.
  - If you only have 2 values, just present those 2 values. Converting 2 measurements into 2 other quantities (mean and SD) does not make sense for analysis.
  - If you really must calculate a variance, possibly use Mean Absolute Deviation (MAD), create a histogram and summarise the distribution of similarity/dissimilarity.

Recommendations for IB procedures, instructions and forms

- Protocols of the report presentation are mixed. Referencing ranged from appropriate in-text citations and footnotes to a list of URL addresses at the end with no indication of which websites were actually used. Students must be taught to provide in-text citations and to reference figures and secondary data correctly. Although they were not penalised for this in COM, it still needs considerable attention as many IAs bordered on academic malpractice.
- Reports should be anonymous. Many cover sheets and title pages include the student's name and school, or teacher information.
- Most reports had some teacher justification of the criteria marks. Teachers should comment on the final report, guiding the moderator/examiner to understand how a criterion mark was awarded, rather than a simple "copy/paste" of the descriptor.
- Candidates should be reminded of the IA word count (2250 words) and which sections should be counted (see COM section). Many reports indicated a word count over 2250 but were in fact under, as the count given was for the whole document, including the bibliography.
- Internal standardisation of the work with colleagues in the science, math or I&S subjects can be helpful as many types of report are possible for ESS.

Standard level paper one

General comments

The majority of G2 respondents considered the difficulty of the paper to be appropriate, although over a fifth believed it was a little more difficult than the previous year. The quality of the paper in terms of clarity of wording, presentation, readability, suitability and inclusivity was considered by most respondents to be either acceptable, good or very good.

The areas of the programme and examination which appeared difficult for the candidates

Some candidates had difficulty in understanding the requirements of some of the higher level command terms. For examples, the command term "explain" was often interpreted as describe and "to what extent" was interpreted as to consider only the merits without including any counter arguments or a balanced conclusion.
Candidates struggled most with the question on using a biotic index which involved sampling of macroinvertebrates (Q5a). This may have been due to lack of time and opportunity to conduct practical investigations out in the field.

Candidates also found it difficult to: (i) explain in sufficient detail how changes in one ecosystem can lead to changes in another, e.g. how deforestation in the taiga may impact the oceans (Q6c); (ii) link low tiger population size to low genetic diversity and associated reduction in resilience (Q7b) and (iii) construct a coherent argument (Q10).

The areas of the programme and examination in which candidates appeared well prepared

Most candidates were able to extract information from graphics in the resource booklet correctly (e.g. Q1a and Q1b) and calculate a percentage (Q6b). Implications of changes to the food web were well understood (Q7a).

The strengths and weaknesses of the candidates in the treatment of individual questions

Question 1(a)

Most candidates correctly identified the biome.

Question 1(b)

Most candidates correctly identified the agricultural activity.

Question 2

Overall, this question was poorly answered. Although the majority of candidates identified the factors that enhance primary productivity, the common error was not to link these conditions to levels of photosynthesis or plant growth.

Question 3

The majority of candidates gave a correct answer. There was a good variety of acceptable responses. A common error was to state yaranga was made of wood or local materials without explaining why this was

more sustainable or that city houses were made of concrete, brick or man-made material without linking this to greater use of energy, production of waste or chemical pollution.

Question 4(a)

Many candidates incorrectly answered this question. Some candidates did not consider the overall trend since the 1980s through to 2015 as illustrated within Figure 6b and incorrectly gave a reason for an increase in sulphur dioxide levels (e.g. the opening of the third smelter). Some inappropriately linked the reduction in sulphur dioxide emissions to the use of catalytic converters in cars.

Question 4(b)

Overall this question was poorly answered by many candidates with most describing the vegetation damage illustrated in Figure 6(c), rather than explaining the reasons for the variation in damage observed. Many responses did not link the vegetation damage to the release of pollutants from the smelting factories in Norilsk or how these pollutants may be dispersed in the environment.

Question 5(a)

Overall this question was poorly answered. A significant number of candidates did not attempt to answer the question, leaving a blank response. Few candidates were able to fully describe how the river could be sampled when using a biotic index. Some students inappropriately suggested the use of BOD, pH, turbidity, colour, fish, Lincoln's Index or vegetation around the river.

Question 5(b)(i)

There was a wide range of responses for this question, with many correctly linking their response to the actual impact on living organisms. However, it was clear that a significant number of candidates did not understand what a biotic index was and incorrectly discussed the use of abiotic parameters such as pH.

Question 5(b)(ii)

Many candidates correctly answered this question. A popular response was "it does not measure the level of the actual pollutant". A significant number of responses were too vague, such as "it is not exact or precise".

Question 6(a)

Many candidates correctly answered this question with popular responses including the taiga acts as a carbon sink, absorbs carbon dioxide or produces oxygen (via photosynthesis). However, a significant number of responses did not focus on an ecological service or function but instead included provision of goods e.g. timber.

Question 6(b)

The majority of candidates successfully performed this calculation. Incorrect rounding, i.e. 60%, was the most common source of error.

Question 6(c)

Responses varied widely for this question. Good responses gave detailed answers that linked deforestation to impacts in the ocean, ranging from ocean acidification to sea-level rise. A common error was to assume that eutrophication would occur as a consequence of deforestation despite the taiga soils being nutrient poor.

Question 6(d)

This question was generally answered well by most students. Common errors included stating "time it takes for trees to grow" or stating only "temperature" or "rainfall" rather than "low temperature" or "low rainfall".

Question 7(a)

This question was very well answered by most candidates.

Question 7(b)

Although most students were able to give one reason, such as "not being able to find a mate", few gave a second reason required to achieve the full two marks.

Question 8

Although most candidates achieved some marks for this question, few achieved all 3 marks. Many did not recognise the requirements of the command term 'evaluate' and that a strength, a weakness, and overall appraisal was necessary to achieve full marks. Few candidates evaluated the different measures by comparing their relative success.

Question 9

The majority of candidates achieved at least one mark for this question. Many only gave one rather than the two reasons required. The most popular response was a reduction in roadkill. Few candidates referred to a reduction in habitat fragmentation through removal of the roads.

Question 10

Responses varied widely for this question with most candidates achieving some marks. Some responses were well focused, considered both sides of the argument and used evidence given within the resource booklet to support their key points. Whereas other responses were too generic and did not use the information provided or gave only one side of the argument. Few responses gave a balanced conclusion supported by evidence.

Recommendations and guidance for the teaching of future candidates

- Students should be encouraged to read the question carefully and thoroughly. Students should practice reading exam style questions to try and understand what is being asked and then how to answer the question directly.
- Ensure the meaning of each command term is fully understood. It may be useful to practice answering the same question using a different command term to really understand the difference between describe, explain etc. Students should also know which command term requires them to include counter arguments and a clear conclusion/appraisal.
- Students should be encouraged to plan and practice 6-mark questions, providing arguments for and against together with a balanced conclusion.
- Students should be encouraged to consider the number of marks that are awarded to a question and ensure that enough information has been included to earn full marks (e.g. reasons, impacts, limitations, or examples).
- Students should be encouraged to avoid repetitive points in the same response.
- Students should be encouraged to give focused answers to questions using appropriate ESS terminology. They should avoid using generalised words or phrases such as "pollution/emissions", "impacts/effects" as these are too vague for credit. Responses need to be specific, for example, if pollution is being emitted, what kind of pollution and what is its impact.

- Students should be encouraged to take care with their writing during the exam to ensure that it is clearly legible. Only dark ink should be used as scripts will be scanned and marked on-screen.
- Candidates should be encouraged to keep their answers within the answer box. If extra space is required, then they should continue the response on additional pages.
- Students should practice past papers, answering different command terms, extracting information from data tables, charts and graphs.
- Students should be discouraged from leaving blank responses.

The whole syllabus should be covered in sufficient detail. This includes ensuring students have knowledge and understanding of:

- practical fieldwork and sampling strategies in aquatic systems (which may be considered virtually)
- biotic indexes, use of indicator species, the need to take control samples (upstream) and to repeat measurements over time.

Further comments

A few responses suggested a lack of a calculator. Schools should ensure there are some spare calculators available within the examination room for use by candidates who may have forgotten to bring their own.

Standard level paper two

General comments

The performance of candidates on this paper was slightly higher than previous sessions. This seemed to come from better scores on Section A questions, that possibly allowed a wider range of acceptable responses than usual, making the overall paper a little easier than the last session in May 19.

Generally, the G2 teacher feedback suggested that clarity and presentation of the paper were considered very good. There were no issues arising from the Section A questions and, while there were a couple of queries over the Question 1 diagrams, these did not appear to hinder students' responses that were generally very good to this question.

Some G2 comments focused on difficulty of the language in Section B part c questions. A careful balance is required here. The questions are designed such that stronger candidates can display a deep and subtle analysis of course material in a new way and thus they require a greater sophistication in their format. They should still enable weaker and second language candidates to gain credit, so of course the wording needs to be readily accessible. Despite these reservations in some of the G2 comments, there was no real evidence that candidates struggled with "what the question was asking" on these occasions. Difficulties arose more from an imperfect grasp of technical terms such as mitigation, adaptation, feedback, unsustainable, etc. There is no escaping the use of such terms and these need to be a focus of the exam preparation.

There was some concern at the inclusion of two questions on experimental procedures in a year where internal assessment opportunities were limited. Unfortunately, the paper was authored in 2018 before there was any hint of restriction on teaching practical skills. Besides, the major difficulty with question 5a was in simply understanding the concept of gross secondary productivity. Understanding the concept instantly implies a methodology. Just as the principle of mark-release-recapture in question 7a should instantly imply what aspects make it reliable.

The areas of the programme and examination which appeared difficult for the candidates

In terms of syllabus content, areas that candidates showed less confidence and/or accuracy in on this paper were ozone depletion, roles of the atmosphere in regulating temperature, mitigation versus adaptation, gross secondary productivity, examples of negative and positive feedback, the S-curve for population growth.

There was also some difficulty in identifying broad trends in data (questions 2a and 3a) as distinct from specific details.

The areas of the programme and examination in which candidates appeared well prepared

Candidates generally did well in addressing terrestrial and aquatic food production, water scarcity, evolutionary processes, strategies to address climate change, energy sources/choices.

Despite the greater challenges of the Section B part c questions, overall, candidates showed an improved approach to them, often making a clear attempt to address two sides of an argument and including a conclusion.

The strengths and weaknesses of the candidates in the treatment of individual questions

Question 1(a)(i) & (ii)

Virtually all candidates were able to identify the appropriate foods.

Question 1(b)

Most were able to recognise one pyramid being inversely related to the other.

Question 1(c)

Most were able to identify potentially positive or negative impacts of agriculture, though no credit was given for identifying absence of impacts from raising livestock.

Question 1(d)

Most were able to give two ways in which beef farming would increase ecological footprint.

Question 1(e)

Most candidates were able to give at least one reason for differing food choices between countries.

Question 2(a)

Most were able to identify the general pattern of increased scarcity although some got tied up in specific details of individual countries.

Question 2(b)

Most identified either positive of negative impacts of climate change on water scarcity.

Question 2(c)

Most were able to suggest at least one human influence on water scarcity other than through climate change.

Question 2(d)

Most could explain at least one reason why some countries did not experience water scarcity.

Question 3(a)

Most were able to identify either the geographic or atmospheric location of the ozone hole.

Question 3(b)

Many struggled to describe general trends of change in the data of this graph, either opting for just an 'overall increase' or describing year by year changes.

Question 3(c)

Few accurately identified the possible causes of this change in the ozone hole.

Question 3(d)

Many were able to gain some credit for their responses to this question, but few recognised the reduction in RATE of increase in the ozone hole which was the major achievement of the Montreal Protocol and the persistence of CFCs preventing any substantial decline.

Section B

Question 4(a)

Many candidates were able to describe processes of natural selection and survival of the fittest, although some confused their response with references to speciation.

Question 4(b)

Few candidates scored well on this question primarily through confusing the role of the ozone layer with global warming. From a large sample of scripts, over 60% of candidates were under the mistaken impression that 'the prime cause of global warming was the hole in the ozone layer that has been damaged by greenhouse gases like CO_2 and methane'! It is phenomenal how popular this mistaken myth predominates amongst the candidature. It was a minority that were able to think beyond the greenhouse effect and address reflection from clouds, convections cells and tropical cyclones spreading heat and latent heat over the Earth's surface.

Question 4(c)

Generally, there were many good responses to this question. However, there was a tendency for error to creep in to the clear distinction between mitigation and adaptation. Strategies like carbon capture, renewable energies, afforestation were commonly and mistakenly addressed as adaptation strategies. The fact that adaptation strategies are those enabling us to *live with* the impacts of climate change rather than attempting to reverse them, was not clearly grasped by many candidates.

Question 5(a)

The majority of candidates scored little, if anything, for this question as they confused gross with net secondary productivity and hence described strategies of finding dry weight of organisms that was unnecessary. Those that recognised the concept as being 'dry weight of food absorbed' found it easy to identify a method by subtracting dry weight of faecal loss from that of food eaten.

Question 5(b)

Many candidates scored some credit here, identifying the run-off into water bodies damaging plants and animals and leading to loss of biodiversity. Few considered more widespread impacts of soil erosion, release of aluminium, impact on nutrients, etc.

Question 5(c)

Many candidates could identify some ways in which the process of harvesting or farming of fish could be unsustainable even with application of maximum sustainable yield. There were also several very thorough responses to this question which considered multiple factors.

Question 6(a)

Candidates generally demonstrated considerable appropriate knowledge in response to this question but often struggled to identify four discreet points.

Question 6(b)

Most were able to link high productivity with high resilience but were often limited in the extent of their explanation.

Question 6(c)

Candidates struggled with this question, mainly due to a limited grasp of the nature of feedback, in particular, how positive feedback mechanisms can be advantageous in the context of regrowth and re-colonisation through succession. Few candidates could clearly apply concepts of negative or positive feedback to the context of plant communities.

Question 7(a)

Many candidates gained a mark or two for identifying aspects of reliable mark–release–recapture techniques, but a significant minority seemed unfamiliar with the process.

Question 7(b)

Most candidates had some idea about population growth and interactions with the environment, but a good number mistakenly focused solely upon the population oscillations in the plateau phase rather than the full scope of the S-curve.

Question 7(c)

There were some excellent responses to this question with candidates well-prepared to take the claim of the question stem to task, with apt and well-explained examples. Weaker essays simply lacked a broad enough scope of such examples.

Recommendations and guidance for the teaching of future candidates

It would be wonderful if one could somehow stamp out the confusion about ozone depletion being the prime cause of global warming (its contribution is minimal to the point of insignificance) and candidates are losing credit for this in nearly every examination.

Generally, some of the usual weaknesses in exam strategy (e.g. not paying careful attention to the number of marks being awarded and specific command term being used) seemed less apparent this session which suggests some good practice in approaching examinations that should be sustained.

Very often students are losing credit by not providing sufficient knowledge statements in response to questions. This was particularly the case in Section B part b & c questions. Practice in brainstorming ideas and facts from different parts of the syllabus would be useful preparation to address this shortcoming.

Increasing attention to those areas of the programme identified above that proved more difficult would naturally be of benefit … and particularly addressing the confusions that persist around global warming and ozone depletion!