Province of the
EASTERN CAPE
EDUCATION

ASSESSMENT & EXAMINATIONS
Bundy Park, Schornville, KWT * Private Bag X 4571, KWT, 5600
REPUPLIC OF SOUTH AFRICA, Website: www.ecdoe.gov.za

E-mail: Varkeychan.Joseph@edu.ecprov.gov.za
Ref No: 13/P Tel: 043 604 7803/10/083 262 5466
Enquiries: MR V A JOSEPH Fax: 043 604 7789/0865664627

NSC 2011 CHIEF MARKER'S REPORT

SUBJECT	LIFE SCIENCES

PAPER	2 (VERSION 1)

DATE OF EXAMINATION:	21.11.2011	DURATION:	2½ hours

This report is aimed at providing valuable feedback to schools, subject advisors, teachers and learners about common errors committed by candidates in the answering of questions, to assist teachers and subject advisors to identify areas that need to be given special attention in the teaching and learning of the subject in 2012.

Your responses will be based on two parts:

Section 1: General overview of Learner performance in the question paper as a whole

Section 2: Comment on candidates' performance on individual questions (Detailed explanations must be provided **per question** as follows: (You may include sub questions where necessary)

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

(b) Why the question was poorly answered?

(c) Provide suggestion for improvement in relation to teaching and learning

(d) Describe any other specific observations relating to responses of learners

(e) Any other comments useful to teachers, subject advisors, teacher development

SECTION 1:

(General overview of Learner Performance in the question paper as a whole)

The overall performance of learners (from a random sample of 100 scripts) was 56.2/150(37.4%). This is not a very good result for full-time candidates doing Life Sciences Paper 2. The results for each of the question are described in detail in Section 2 below. Possible reasons for the poor performance of the candidates in our Province is also analysed in detail.

SECTION 2:

Comment on candidates' performance in individual questions
(It is expected that a comment will be provided for each question on a separate sheet).

QUESTION 1

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Overall performance of learners from a sample of 100 centres range from 7/50 to 47/50. The average mark is 22.2/50(44.4%)

An obvious deduction is that learners from few centres are performing extremely well and those from majority of centres are still struggling to achieve the desired standard.

The marked disparity in marks achieved is still cause for grave concern.

(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

Specifically one can analyse the different subsections in this question as follows:

1.1 Marks were given as a response to this multiple-choice question. Interpretations by markers that marked this questions were

- too much guessing by most of our learners in response to this question
- not enough reasoning by most of the learners
- responses to 1.1.1 to 1.1.6 was generally good but interpretation of graphs from 1.1.7 to1.1.10 was poor indicating a lack of graph interpretation
- Questions 1.1.7 to 1.1.10 are good questions that test learner insight. As a result the better performing learners responded positively.
- Questions 1.1.1 to 1.1.4 tests leaner content knowledge and the fairness of these questions reflected pleasing learner responses

1.2 Biological terms as an answer for 8 descriptions to this question reflected the barriers to language that the majority of our learners have. Performance of our learners in this subsection raged from 1/8 to 7/8. Average % = 37.5

The following educator interpretations are:

1.2.1 Dilation as an answer was not accepted in the final memorandum as this was an answer given by many leaners

1.2.2 the same applies in this question as succession was given as an answer by many leaners but Ecological succession was accepted as the only answer.

1.2.4 the phrasing of this description led to learner confusion and their responses were generally poor

1.2.5 / 1.2.6 the description were fairly specific and learner content knowledge realized

better responses.

1.2.7 The Afrikaans question paper was translated differently thus allowing all learners a "free" mark in this question which hopefully will not be the case in future question papers. Learner spelling is a problem in general and a direct consequence is difficulties in writing words correctly and reading instructions properly.

1.3 The column I/column II type questions is a major interpretation problem for the majority of our leaners. Learner performance ranged from 0/12 to 10/12. Average % = 34.4. Overall appraisal of this subsection is:

- Acceptance that learner has to know the content of the two knowledge areas tested very well
- Application of learner knowledge in order to answer these 6 generally satisfactory by many learners
- Closer inspection realizes the following

1.3.1 / 1.3.2 Relatively straightforward questions did not realize desired responses
1.3.3 Learners struggled to see that sporophyte generation is "diploid" not "haploid"
1.3.4 / 1.3.6 A good question that were not answered in the affirmative.

1.4 A very fair question desiring a diagrammatic interpretation by our learners saw their performance ranging from 0/5 to 5/5. The average % = 46.9

- 1.4.1 (a),(b),(c) Satisfactory questions that learners generally answered correctly
- 1.4.1 (d) Some learners answered A instead of B. A "control voluntary actions" while B "co-ordinates voluntary muscle movements".
  Learner could have misunderstood the statement.
- 1.4.1 (e) A fair question realising good responses
- Many learners wrote down words instead of letters. They did not read the instructions thus forfeiting all 5 marks.

1.5 A very good question. Even though flowers are reflected on the question paper as virtually similar in size, naturally one is much larger than the other. Learner performance ranged from 1/5 to 5/5. The average % is = 39.9

Closer inspection of this question leads us to the following points:

- 1.5.1 Labels for C/D and E were generally well answered
- 1.5.2 A question that required insight by our learners and many were found wanting
- 1.5.3 A scientific skill – interpreting natural size of flowers using level of magnification- was required by our learners but the majority failed to apply their content knowledge base.

(c) Provide suggestions for improvement in relation to teaching and learning.

The improvement of learning and teaching can only become more of a reality once the curriculum for Life Sciences reaches some sort of finality. Changes to the curriculum for our subject during the past ten years has done more harm than good which is reflected in negative learner performance during this period,

On a more specific level, suggestions to improve teaching and learning for questions related to question 1 are:

- More multiple-choice type questions must be made mandatory for school-based assessment e.g controlled tests etc.
- The same applies to Column A/Column B type questions and biological terms
- Learners should be given a list of biological terms with their aligned descriptions/definitions. Rote learning could become the norm, not the exception, in our classrooms so that learners can link definitions/descriptions

to the correct biological terms

- Use of diagrams and graphs as well as their application seems problematic Graphs on predator-prey relations and age-gender pyramids as well as diagrams like the brain and flowers are in the curriculum. However, their application by our learners is not good generally and tuition in the classroom is needed on that level

(d) Describe any other specific observations relating to responses of learners

Most of the learner responses are covered in (b)

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

- School based assessment in our subject should strictly follow curriculum guidelines
- The need for subject advisors to be overseers of fewer schools, be more subject specific and "hands-on" can only improve learner performance.
- Cluster meetings should take place regularly in order for "best practices" to be shared
- Sharing of subject information is critical due to periodic curriculum changes.

QUESTION 2

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Overall performance of learners in this question range from 2/30 to 28/30. The average mark is 9.8/30. Average % = 32.8%
Data- response type questions are also found difficult by many learners. This question was poorly answered in the majority of our schools and very well done in few schools

(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions

The academic performance for learners in 2.1 ranged from 1/9 to 5/9. Average % = 34.3
When analysing reasons for poor performance in this subsection in more detail, the following can be realised:

- 2.1.2 Function of B saw some learners giving "captures sound waves" as answers which are incorrect Many learners did not know the function of part D - the round window.
- 2.1.3 A higher order question and the only accepted answer in the memorandum did not make provision for "membranes being thin and tightly stretched" Few correct answers were given by our learners
- 2.1.4 Learners were expected to provide a reason for "mucal blocking of the Eustachian tube" and many did not give the correct answer

2.2 Learner performance ranged from 1/7 to 5/7.The average % is = 31.5. The reasons for the poor general performance are:

- A good question but tricky in some aspects. Application by learners from tabular

information was generally poor

- 2.2.1 (a) Explanation of answer showed that many learners did not include the amount of light as an answer.
- 2.2.2 Learners generally describe accommodation in the eye instead of the correct pupillary mechanism. The explanation of contraction and relaxation of the iris muscles was a problem for most learners.

2.3 Learner performance ranged from 0/4 to 3/4 .The average % is = 34.2. Reasons for this performance:

- Many learners did not study the graph of the menstrual cycle as mention in Question 1 Interpretation of graphs remains a major problem.
- 2.3.1 The drawing of the graph was slightly misleading, thus day 15 was also accepted as an answer
- 2.3.2 According to markers the rigid memorandum did not accept days 1-6 and days 1-7 as an answer and this they deemed unfair to the learners.
- 2.3.4 Was answered very poorly. Learners generally did not know the functions of progesterone and FSH
- 2.3.5 Many learners had a problem in accounting for the change in thickness of the lining
- 2.3.6 and 2.3.7 Learners had to seek the answers from the graph. Their reasons for non-fertilisation were generally poor.

2.4 Learner performance ranged from 0/4 to3/4.the average % = 36.7.

- This open-ended question is a higher order question
- Better performing learners were given close to or full marks for this question while many learners had no clue to answering 2.4.1
- The explanation for investigative validity in 2.4.2 was poorly answered
- Too few marks were awarded for this type of question

(c) Provide suggestions for improvement in relation to Teaching and Learning

- More workshops on practical investigations has to be held especially in rural districts
- Learning material in the form of charts and videos has to be distributed to schools to assist struggling teachers
- Cluster subject meetings should be held for subject advisors to provide expert guidance on types of investigations and their successful implementation in their classrooms.

(d) Describe any other specific observations relating to responses of learners

Many of the learner responses has been dealt with in (b)

(e) Any other comments useful to teachers, subject advisors, teacher development, etc.

- Sharing of good resource material should become a reality in “far –flung” rural schools
- Joint teaching workshops should also be initiated

QUESTION 3

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Overall performance of learners in this question ranged from 2/30 to 22/30.The average mark is 11.4/30 (37.9%). One can deduce generally from the learner performance that this question was poorly answered

(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

A closer examination of this question reflects the following:

3.1 Learner performance ranged from 1/7 to 6/7.The average % = 47.5. Learners had to use data from a table and a formula to answer this question.

- 3.1.1 This question was answered poorly. Most learners (+80%) would have performed better had the question asked for precautions of the mark and recapture method. Learners thus misinterpreted the question. Learners and teachers possibly put more emphasis on LO1 (facts) than LO3 (skills) (planning investigations).Not enough time was probably spent on teaching skills to interpreting questions of this nature. Learners did not understand steps for planning this investigation
- 3.1.2 Possible ambiguity could have been created in the minds of many learners between data and the table i.e number marked and released in first sample, with that of the formula F = number caught in first sample

3.2 Learner performance ranged from 0/10 to 10/10. The average % is = 42.7.
Questions phrased in 3.2 were fair even though learner performance did not reflect this.

- 3.2.4 Most learners only gave one reason for the constant C level(from graph) thus losing 2 marks
- 3.2.5 Most learners achieved one or no marks for this question. Interpretation from the graph as well as content knowledge was generally lacking.

3.3 Learner performance ranged from 0/7 to 5/7. The average % is = 42.2.
Most learners answered this question poorly possibly due to a lack of comprehension of the text as well as the question, (could be second language LOLT learners.)

- 3.3.1"…role players/stakeholders…" may have confused the learners since the majority gave the names of minerals as an answer. A possible question could have been "name three different group of people affected by the proposed mining?", which could have yielded a better result
- 3.3.2 Is an open-ended but fair question.

3.4 This question was poorly answered by most learners. Learner performance ranged from 0/6 to 5/6. The average % is = 20.1

- 3.4.1 Most learners misinterpreted this question. They described the interactions without naming them as was expected by the question
- 3.4.2 Many leaners did not pay close attention to scenario A. On seeing the giraffe they assumed "Lamarck's evolution theory" thus answering the question incorrectly although it is paper 1 work. Animals feeding from one tree also led learners to believe that competition occurred.

(c) Provide suggestions for improvement in relation to Teaching and Learning

More emphasis should be placed by Life Science teachers on learners knowing biological terms and interpreting data in any form e.g diagrams,sketches,charts,tables,graphs etc

(d) Describe any other specific observations relating to responses of learners

Other specific observations for 3.1 are:

- Take repeated samples of fish and finding the average sample
- Take samples randomly
- The mark used must not interfere with the fish
- Sufficient time must be given between samples so as to allow the fish to mix

The misconception by learners was to do with the validity of the investigation and not the planning of the investigation

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

- Teachers should be developed in forms of workshops, joint brainstorming sessions, sessions with subject experts and further studies in this subject
- Teachers must try to do much more work related with planning for an investigation with the learners.

QUESTION 4

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?

Overall performance of learners in this question ranged from 1/40 to 38/40.The average mark is 12.8/40(31.9%).Many learners performed poorly in this question

(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.

4.1 Learners can draw different types of graphs due to their added Maths Literacy backgrounds. Some drawbacks however are:

1. An appropriate scale for X and Y-axes can be a problem for some learners
2. No caption given in some instances
3. Only one variable given for the caption when two are expected
4. Proper graph paper not provided which will improve accuracy
5. Axes being transposed as result of learners not knowing difference between dependant and independent variables, and
6. Use of the population size units directly from table onto the Y-axis(actual /desired intervals not given on Y-axis)

- 4.1.1 Most learners answered this question positively.
- 4.1.2 (a)/(b) Many learners could determine the population size and time taken for the population to double
- 4.1.3 Learners have their own interpretation which in most cases was incorrect. A language barrier also exists with many of our learners

4.2 Formulation of a hypothesis remains a problem for most learners. This is a higher order question(LO1) that saw learner performances range from 0/8 to 8/8.The average % is = 21.7. Learners either knew or did not know what a hypothesis was.

- 4.2.1 A very poorly answered question. The determination of the two variables, even though clearly mentioned in the result table, was not discerned by most of our learners.
- 4.2.2 - 4.2.4 The problem encountered in answering 4.2.1 persisted when learners

attempted to answer these three questions. Question 4.2.4 in certain instances was reflected as a hypothesis even though a conclusion was asked for.

4.3 Learner performance in this question ranged from 0/20 to 16/20 The average % is = 23.2. Essay writing for second language learners will always remain a problem. A guide (maybe in the form of a rubric) as to the delineation of marks allocated would have made the essay a less structured one. As a result, the frame work for marking this unstructured essay allowed more marks for "… control of glucose concentration …"(10 marks), than "…symptoms …" (3marks),and "…management…"(2 marks) . Better performing learners wrote their essays perfectly while the majority had no clue as to where to place the emphasis for the essay. Most markers marking this question felt the rigidity of mark allocation in the memorandum disadvantaged many learners. Leaner answers to the essay depicted:

- ❖ An incorrect sequence that in many cases was haphazard
- ❖ Relevant facts not given
- ❖ No elaboration or further explanation
- ❖ Not many meaningful sentences written
- ❖ Leaner expression very limited due to language problems
- ❖ 3 marks lost for synthesis in many cases

(c) Provide suggestions for improvement in relation to Teaching and Learning

- thorough teaching of graphs, labelling and scale of axes etc, is needed
- applying learner knowledge to the different data type and essay type questions needed to be emphasised.
- learner support material, being provided to a certain extent in the Province currently without common types of questions and answers. (examination emphasis has to be given in poorly performing schools and districts), and
- language improvement is a necessity as to ensure that our learners can begin to read and understand what is expected from them.

(d) Describe any other specific observations relating to responses of learners

Specific observations are mentioned previously in (b)

(e) Any other comments useful to teachers, subject advisors, teacher development etc.

More time is given to complete the modules for Life Sciences P1 than for Life Sciences P2 . A shared time distribution is needed for teachers to complete the curriculum needs for Life Sciences P2 plus adequate time for revision. The changes in our curriculum also adversely affects teachers being able to get to grips with the demands of the subject. A final Life Science curriculum will bring stability and hopefully success.

SIGNATURE OF CHIEF MARKER: _____