GAUTENG DEPARTMENT OF EDUCATION
DIRECTORATE:
EXAMINATIONS AND ASSESSMENT

GUIDELINE DOCUMENT FOR
PROGRAMME OF ASSESSMENT

PHYSICAL SCIENCES

GRADE 12

2008

TABLE OF CONTENTS

1. Introduction

This document provides guidelines for continuous assessment in the National Curriculum Statement Grade 12. The guidelines must be read in conjunction with *The National Senior Certificate: A Qualification at Level 4* on the National Qualifications Framework (NQF) and the relevant Subject Assessment Guidelines (January 2007).

Assessment is an integral part of teaching and learning. For this reason assessment should be part of every lesson and teachers should plan assessment activities to complement learning activities.

Continuous assessment through informal daily assessment and the formal Programme of Assessment should be used to:

- Develop learners knowledge skills and values
- Assess learners strengths and weaknesses
- Provide additional support to learners
- Revisit and revise certain sections of the curriculum and
- Motivate and encourage learners.

In Grade 12 the Internal Programme of Assessment counts 25% and is set and marked internally and externally moderated. The remaining 75% of the final mark for certification in Grade 12 is externally set, marked and moderated.

Table 1: PORTFOLIO TASKS (100 MARKS - 25% OF PROMOTION MARK)

ASSESSMENT TASKS	**TERM 1**	**TERM 2**	**TERM 3**	**TERM 4**	**WEIGHTING**
Controlled Tests	1		1		2 x 5 = 10
Examination (midyear)		1			1 x 10 = 10
Preparatory Examinations			1		1 x 20 = 20
Practical Investigation	1 (Phys./Chem.)	1 (Phys./Chem.)			2 x 20 = 40
*Research Project			1		1 x 20 = 20
TOTAL CASS WEIGHTING					**25%**

* Recommended to be given in the 1st or 2nd term and assessed in the 3rd term.

2. Content of portfolios

The content for Programme of assessment for Physical Sciences is guided by the programme of assessment as stipulated in the Subject Assessment Guidelines (SAG), 2007.

The programme of assessment comprises:

- Two controlled tests (First and Third term)
- Two written Examinations (Mid-year and Prelim)
- Practical Investigation (First and Second term)
- *Research project (Third Term)

(* Recommended to be given in the 1st or 2nd term and assessed in the 3rd term)

3. Programme of Assessment in Grade 12

The assessment tasks should be carefully designed tasks, which give learners multiple opportunities to research and explore the subject in exciting and varied ways.

3.1 Tests and Examinations

Tests and examinations should be written under controlled conditions at a specified time. A test should be at least 60 minutes long and count a minimum of 50 marks. The mid year examinations should test the work done over the two terms. Questions in tests and examinations should assess performance at different cognitive levels across all LOs, with a greater focus on LO 2.

NB: The exemplar questions papers provided by the National Department of Education should serve as a guide on the format of the question papers.

Suggested weighting of cognitive levels for examinations and control tests

Cognitive Level Description	**Weighting**	
	Paper 1	**Paper 2**
Recall (knowledge)	15	15
Comprehension	30	40
Analysis, Application	45	35
Evaluation, Synthesis	10	10

3.2 Practical Investigations

Practical investigations and experiments should assess all LOs with a focus on the practical aspect of the process skills required for scientific inquiry and problem solving. While the focus is on LO 1, educators will be required to set a **compulsory** (pre)-tutorial test in order to cater for LO 2 and 3. The phenomena under investigation must have a context (LO 3) out of which the questions (content, LO 2) will be asked. It is recommended that the weighting of the (pre)-tutorial test should be 35% and LO 1 65%.

See the following Annexures:

- **Annexure A**: Recommended Format for Task Sheet for a Practical Investigation
- **Annexure B**: Generic Rubric for Practical Investigation & Recording Sheet
- **Annexure B 1**: Recording sheet for practical investigation
- **Annexure C**: Rubric for Graphs
- **Annexure D**: Practical Investigation Recommended Topics
- **Annexure E**: Practical Investigation Recording Sheet

3.3 Research Project

A project is an extended task in which the learner is expected to select appropriate content to solve a context-based problem.

A research project involves the collection of data and/or information to solve a problem or to understand a particular set of circumstances and/or phenomena. While the problem that focuses the research task is well defined, the nature of the data colleted will determine the solution to the problem.

See **Annexure F**: Suggested topics for research project. The notes on how to plan a research task are attached (See **Annexure F Notes**). **Annexure N** is attached as an exemplar rubric for assessing a research task.

4. Learner's programme of assessment

The learners' programme of assessment (See **Annexure G**) should be well planned, organized and presented in a neat manner, for example in a file. It should include the following:

- Index/content page;
- A continuous moderation report; (school, cluster & district)
- A declaration by the learner; (See **Annexure H**)
- A summary of marks;
- The tests, examinations and assessment tasks each clearly separated from one another in accordance with the index/content page.

5. Teacher's programmme of assessment

It is required from the Department of Education that a teacher's programme of assessment (See **Annexure I**) should accompany the learners' evidence of assessment.

The programme of assessment should include the following:

- Index/content page;
- The formal Programme of Assessment;
- The instruction sheet for each of the assessment tasks including the LOs and ASs (e.g. Standardized tests, Assignments, Investigation or Project and Examination papers);
- The tools used for assessment for each task (e.g. memoranda, checklists, rubrics)

- Record sheets for each class (recording sheets, **Annexure M**)).
- It should contain model answers to all assessment tasks.
- It should follow the same logical order as the learner portfolio.

6. Evaluating Programme of Assessment

Periodic evaluation of programme of assessment should be conducted at a time predetermined by the teacher and the learners. Logical times for evaluation would be at the conclusion of a project, the end of a programme or unit, term or academic year.

The teacher must make sure that every assessment task is marked and recorded. Marks on the teacher's record sheets must correspond with the marks in the learners' programme of assessment. See **Annexure J**: Recording Marksheet for tasks and **Annexure K**: Programme of Assessment Recording Sheet

6.1 Moderation of Internal Assessment

Moderation of the assessment tasks should take place at three levels during the year. See **Annexure L**.

Moderation of assessment tasks will take place at schools in Grades 10, 11 and 12. In addition, moderation of assessment in Grade 12 will also take place at cluster, district level as well as at provincial and national levels.

6.2 School moderation

The programme of Assessment should be submitted to Head of Department or Subject Head and school management team before the start of the academic year together with the learning programme for moderation purposes. Each task that will be used for the Programme of Assessment should be submitted to the Head of Department or Subject Head for moderation before the learners are given the work to do. The learner's tasks should be moderated by the Head of Department, Subject Head, or his or her delegate before the cluster moderation.

6.3 Cluster and district moderation

Teacher programme of assessment and a sample of learner tasks will be moderated **at least** twice during the first three terms. This can be done by cluster coordinators or district subject coordinators.

ANNEXURE A

RECOMMENDED FORMAT FOR TASK SHEET
PRACTICAL INVESTIGATION

It is recommended that the following aspects be considered for inclusion in a task/instructional sheet that is given to learners:

1. **Date:** The date on which the task was issued to learners should clearly be reflected.

2. **Knowledge Area:** List the Knowledge Area/s from which the task is mainly derived (e.g. Matter & Materials)

3. **Identify Topic:** Select from the list of recommended topics for practical investigations

4. **LOs and ASs:** List all the Learning Outcomes and Assessment Standards covered in the task. Remember that the focus is on LO 1 for practical investigations.

5. **Formulate a problem statement:**
   If possible try to present a real life scenario that is related to the content/topic of the investigation, i.e. set the context.
   Mention all the necessary variables in the context without suggesting a hypothesis to learners. It is expected that at this stage learners are familiar with concepts such as variables (*controlled, dependent and independent*), fair test and hypothesis.
   Instruct learners to investigate relationships amongst the variables by formulating their own hypothesis in the practical investigation at hand.

6. **Design and Plan:** Learners should be allowed time to design and plan their practical investigation in relation to the problem statement hypothesis.

7. **Approval of Draft plans:**
   Deadlines for submission of draft plans should be made known to learners. The draft plans should include amongst other things the following: Aim, Hypothesis, suggested experimental procedure, set-up and a list of apparatus to be used.

   Under no circumstances should a learner be allowed to execute any procedures without prior approval of the draft plans.

Once the plan is approved learners will then be allowed to conduct the investigation and write a report.

8. Report writing: The report should include as a minimum the following headings:

- ✓ Aim
- ✓ Hypothesis
- ✓ List of apparatus
- ✓ Experimental set up (drawings if necessary)
- ✓ Method/procedure
- ✓ Observations
- ✓ Recording of data
- ✓ Interpretation of data
- ✓ Analysis and conclusions

9. Assessment: The generic rubric should be made available to learners.
It is expected that the generic rubric be customised / modified to suite the investigation at hand.

ANNEXURE B

GENERIC RUBRIC FOR PRACTICAL INVESTIGATION

	Level Descriptors				
Skills	0	1	2	3	4
State Problem Statement and Formulate Hypothesis	Not attempted	Either aim or hypothesis stated but not related to the investigation	• Either aim or hypothesis clearly stated and linked to investigation • not all applicable variables mentioned	• both aim and hypothesis clearly stated • all necessary variables mentioned • relationship between the variables clearly outlined	
Design and Plan	Not attempted	Experimental method and procedure not valid	• Method is valid but difficult to implement • Not all the necessary apparatus are mentioned • Safety precautions not considered Some impractical implications (e.g. time)	• Method is valid, viable and implementable • All required apparatus mentioned • Safety precautions noted Method and procedure could be reproduced	• Very creative, valid and original design • The procedure is viable (equipment, time management etc) • Method and procedure could be reproduced • Safety procedure adhered to
Conduct investigation	Not attempted	• Cannot follow instructions/procedure independently • Does not realise the need to control variables • Safety of others not considered • Little or no recording of findings	• Follows instructions/procedure with difficulty • Some difficulties in using apparatus • Need help in controlling variables • Minimal participation in a group • Records findings correctly	• Follows instructions accurately and independently • Contributes positively to group work • Uses apparatus correctly with due regard for safety of others • Records findings correctly • Can control all variables independently	• Follows instructions/procedure accurately and independently • Participates actively in group activities • Follows all safety procedures with due regard for safety of others • Uses and manipulates apparatus appropriately and when necessary • Controls all variables effectively • Records findings correctly • Repeats investigation for precision

Data collection, recording and presentation	Not attempted	• Data collected is wrong/inaccurate • Inappropriate methods of collection • No attempt to record data in appropriate format	• Insufficient data collected. • Method of collection is inappropriate • Data recorded in appropriate format (e.g. table with correct headings, units, labels, etc.) but **not in logical** sequence	• Sufficient data collected • Method of collection is appropriate • Data recorded **logically** and in appropriate format (e.g. table with correct headings, units, labels, etc.)	• Sufficient relevant data collected through extremely accurate methods • Data recorded logically, with precision and in appropriate format (e.g. table with correct headings, units, labels, etc)
Data interpretation	Not attempted	Wrong or not meaningful manipulation of data (e.g. incorrect formulae, equations, calculations or graphs)	• Insufficient manipulation of data • Some correct calculations, formulae and equations	• Meaningful and purposeful manipulation of data (e.g. correct calculations, formulae or equations) • Uses a variety of methods to interpret results	• Correct methods of interpretation and appropriate translations(e.g. table to line graph) • Most calculations, formulae and equations are correct • Uses a variety of methods to interpret results
Analysis and conclusion	Not attempted	• Inaccurate/incorrect comparisons • No link between conclusion and hypothesis	• Incomplete or unsubstantiated comparisons • Links conclusion to hypothesis but does not evaluate correctness of hypothesis	• Makes comparisons to reach meaningful conclusions • Links conclusion to hypothesis and partly evaluates correctness of hypothesis	• Correct and comprehensive analysis of all aspects of results. • Meaningful, detailed and insightful conclusion based on accurate analysis • High degree of correlation between conclusion and hypothesis • Evaluates correctness of hypothesis

ANNEXURE B 1

RECORDING SHEET FOR PRACTICAL INVESTIGATION

PRACTICAL INVESTIGATION MARK SHEET

LEARNER'S NAME	
TOPIC	
NAMES OF GROUP MEMBERS	1.
	2.
	3.
	4.
DATE	

Tutorial *(The tutorial test should at least be out of 25)*	***e.g.*** Mark **=** $\frac{A}{25}$ **x** 35 = B					**B =** *(insert the mark)*
Skill areas	**Mark/Level**					**Teachers comments**
State Aim and Formulate Hypothesis	**0**	**1**	**2**	**3**		
Design and Plan	**0**	**1**	**2**	**3**	**4**	
Conduct investigation	**0**	**1**	**2**	**3**	**4**	
Data collection, recording and presentation	**0**	**1**	**2**	**3**	**4**	
Data interpretation	**0**	**1**	**2**	**3**	**4**	
Analysis and conclusion	**0**	**1**	**2**	**3**	**4**	
TOTALS (23)	Mark **=** $\frac{C}{23}$ x 65 **=** D					**D =** *(insert the mark)*
WEIGHTING (20)	$\frac{B+D}{20}$					**Converted mark =** ***(The mark to be recorded in Annexure M)***

ANNEXURE C

NB: The following rubric could be used to inform the mark allocation for skill area E in the generic rubric

RUBRIC FOR GRAPHS ($LO_{1.3}$;$LO_{2.3}$) FOR PRACTICAL INVESTIGATION

Name of learner: _____ **Grade:** _____

Assessment criteria	Level of Performance		
	0	1	2
A graph is drawn	Not correct shape	Correct shape	
Heading describing variables	No heading/incorrect	Incomplete	complete
Independent variables on horizontal axis & dependent variable on vertical axis	Not present	Only one correct	Both correct
Suitable scale on both axes	No scale	Only one correct	Both correct
Plotting points	No points	Only two points plotted	More than two points plotted
Neatness	Untidy	Tidy	
Total Score	/10		

Name of educator: _____ **Date:** _____

ANNEXURE D

PRACTICAL INVESTIGATIONS: RECOMMENDED TOPICS

PHYSICS TOPICS

1. A tile fell from the space shuttle while being launched. It falls freely towards the earth. When a feather from a bird falls freely to the earth, the velocity with which it falls is dramatically different from the tile that fell from the space shuttle. Is the acceleration of these two objects the same when in free fall? Investigate if there is indeed a difference. Determine if the vertical and horizontal motion of a body that is projected horizontally and that of a body that falls freely, both from rest, at the same moment, are the same or not. Set the acceleration of the projectile to 'g'. Keep factors such as air resistance, time during the free fall and the displacement of the projectile in mind during the investigation.

2. Verbal communication between living organisms takes place by means of sound waves. The receiver does not need to be in a straight line with the source of the sound. As sound waves move through air as a medium of propagation, they encounter many barriers. Investigate the behaviour of sound waves when they move through a slit(s) and use your results to explain Huygen's Principle.

3. A motor uses the magnetic effects of electricity to produce motion. You can also do the opposite – if you move a conducting wire in a magnetic field, you can generate an electric current. Use Faraday's Law to investigate and explain the induction of current in a rotating coil that is placed in a magnetic field. Determine the size of the induced voltage by investigating factors that influence it such as

   a. the speed at which the wire or magnet moves
   b. the strength of the magnet
   c. the number of turns in the coils

4. Investigate the 'Doppler effect' in sound. Discuss its applications in medicine. How did the Doppler Effect assist in our understanding of the expansion of the universe (the Big Bang Theory')?

5. The mixing of plant and synthetic manufactured pigments produces a variety of colours. Our eyes perceive these colours in different nuances of the seven colours of the rainbow. Investigate the use of pigments in dyes and paints, materials and in photography through the ages. Make your own dye.

CHEMISTRY TOPICS

1. Boiling and melting points of substances are influenced by various factors such as the type of bond, intra-molecular forces and the molecular mass of the substance. Design, plan and investigate the effect of increased molecular mass of a variety of substances and relate it to the type of bond (ionic, covalent, polar covalent, non-polar covalent, etc.). Use the increase/decrease in boiling points to classify them and explain their physical properties. Use substances such as ethanol, propanol, butanol, iso-butanol as examples of

alcohols, a number of covalent, polar covalent substances and a variety of salts.

2. Energetic chemicals. When you burn firework, the chemical energy in it is turned into heat, light, sound and movement energy. But what exactly is this chemical energy locked up in the molecule? How the amount of energy released or added influence the rate of a chemical reaction? Design and plan an investigation to determine the rate of a chemical reaction when the temperature of the system is changed. How will the surface area influence the rate of a chemical reaction? Keep factors such as type of substance, concentration in mind when the investigation is performed.

3. A system such as enclosed NO_2 gas is in equilibrium with its dimer, N_2O_4. What effect will an increase or decrease in temperature have on the equilibrium condition? Investigate the shift in equilibrium and relate this to the cost effectiveness of product formation in industry.

4. Electroplating is common practice in industry to produce for example, earrings that are sold at expensive prices as gold jewellery, but is only made from a cheap metal base covered with a thin layer of gold. To electroplate a metal you simply need a basic electrolytic cell. Investigate the relationship between the amount of current required and the rate of product formation (metal deposit) in the electrolytic cell. Which conditions will give the best nickel plating on copper?

EXEMPLAR PRACTICAL INVESTIGATION

Investigating electrical cells.

Most chemical cells give out energy as thermal energy (heat). For example, many metals react with acids to produce hydrogen and heat. It is possible to obtain electrical energy from the reaction of metals with acids. Two metals are needed and the circuit has to be complete. The metals and the acid form part of an electrical cell.

Design, plan and carry out an investigation to make the electrical cell with the highest output. Start by thinking about the following:

- What factors may affect the output of the cell?
- Which factor will you investigate?
- How will different factors influence the output of the cell?
- List the factors and the possible influence each will have on the cell output.
- How will you measure the output of the cell? Is using a light bulb the best way?
- How will you prepare your metals to make sure you are dealing with a ‘pure’ metal surface?
- How can you make sure that you use all possible combinations of metals available to you?

Write a scientific report about the practical investigation.

ANNEXURE E

PRACTICAL INVESTIGATION MARK SHEET

The practical mark sheet must be in the front page of each practical.

LEARNER'S NAME:	
TOPIC:	
NAMES OF GROUP MEMBERS:	
DATE:	

NB: ENSURE THAT THERE IS A LEARNER DECLARATION

Skill areas	**Mark/Level**					**Teacher's comments**
A. State Aim & Formulate Hypothesis	0	1	2	3		
B. Design and Plan	0	1	2	3	4	
C. Conduct investigation	0	1	2	3	4	
D. Data collection, recording and presentation	0	1	2	3	4	
E. Data interpretation	0	1	2	3	4	
F. Analysis and conclusion	0	1	2	3	4	
TOTALS (23)	Mark = _____ 23					Converted mark = _____ 20

ANNEXURE F

SUGGESTED TOPICS FOR RESEARCH PROJECT

- **Fertilizers:** research on the manufacture and use of organic and inorganic fertilizers and how these affect the environment. examples could be fertilizers such as ammonium nitrate and ammonium sulphate
- **SASOL:** the manufacture of fuels from coal. The research could be based on fractional distillation, economic and societal benefits from the industry as well as related health and environmental issues.
- **Soap and detergent industry:** research to focus on the chloro-alkali industry in SA, production of soap and detergents, and related health and environmental concerns.
- Speed kills – does it? (physics)
- Why is it safer to drive slower? (physics)
- What is weightlessness? (physics)
- How does SALT (Southern African Largest Telescope) work? (physics)
- Is SALT really beneficial to the society of Sutherland? (physics)
- How do cellphones work? (physics)
- Are cell phones dangerous? (physics)
- Cellphones versus landlines: Physics principles/ economy/ installation – Which is better? (physics)
- Alternative energy sources (physics/chemistry)
- Nothing is wasted - everything can be re-used (chemistry)
- Why is carbon / silicon, etc so special? (chemistry)
- The ozone threat: are we winning? (chemistry)
- Do we need better water purification methods? (chemistry / integrated)
- How safe is Warrenton's/De Aar's/etc. drinking water? (chemistry)
- Tap water: What are we drinking? (chemistry)

The Department of Education strongly recommends that each school has a Projects Day / Science Day in the third term where all the projects are displayed and evaluated.

The projects should be entered in the Eskom Expo for Young Scientists.and or SASOL TECHNO-X

ANNEXURE F

NOTES

Planning the task

Learners must carry out a scientific project/investigation in a knowledge area of the Gr 12 learning programme that interests them. The purpose of the investigation is to extend the boundaries of the scientific knowledge of the learner and enable them to use and apply scientific skills as stated in the learning programme. The research task may be given by the educator, or the learners may choose their own topic.

The emphasis is mainly on LO3, where the nature of science is contested in its relationship to technology, society and the environment.

The time frame for the research task is more relaxed than the practical investigations; however, time management is important. The learners should start with their tasks in the second term. Usually the time required to complete a task is 1 - 4 weeks.

Learners must be supplied with a rubric beforehand to enable them to determine the assessment criteria. Supply learners with a clear indication of time allocated to various phases of the project.

The following steps is a guide to plan the task

Step	**Time allocation**
Proposal of topic to educator	2 days
Design plan	1 week
Progress report	1 week
Final project	1 – 2 weeks

Projects may be done individually or as a group (collectively). It is preferred that only two learners form part of a project. Every stage of the project must be guided and monitored by the educator. Give examples of resources that may be used

Proposal of project

If the learners choose their own project they will need to hand in the topic of the chosen project. Ensure that the project is suitable and enough information is available to complete the project.

Design plan

This involves a logical, orderly way the learners need to test the hypothesis/obtain information on topic.

They should list and describe all steps, equipment, etc needed. Variables involved and those that will be tested should be described.
Outline experimental procedure to test variables
Include diagrams where appropriate.
Outline procedure for measuring and analyzing and gathering and interpreting data.

Progress report

To ensure learners are on track with the research task, a progress report should be submitted and should include aspect such as

Detailed reference to research material used thus far
Record of planning
Record of all rough data and experimental results
Any logistics (references, dates, interviews confuted, books reviewed, etc.) appropriate

Forms of communication

Written work, project notes, posters or any form of communication appropriate may be used.

Written work should have the following minimum requirements:

- Cover page, contain title of project, list of content, aim, hypothesis, names of group members
- Introduction paragraph – briefly outline what the project is about
- Theoretical framework – mention scientific principles relevant to topic. For example state and explain the relevant scientific laws, energy transfers, mathematical relationships, involved, scope of problem and potential solutions. As much reference books and acceptable resources (magazines, news paper articles) must be consulted. Include general information, past and present relevant research.
- Hypothesis
- Materials/tools/method – detailed description of apparatus, method, method of collection of information or technologies used. Sufficient detail must be provided. Use pictures, drawings, photographs, etc. to illustrate the project. Include details of the project history, findings and observations.
- Learners are not allowed to copy material straight from reference books. The content must be understood and explained in own words.
- Results (tables, graphs, etc.)
- Summary of analysis of observations during execution of project. Consider differences, similarities and relationships, unexpected and expected outcomes. Include possibility and effect with explanation of experimental errors.
- Conclusions – must address the original problem
- Bibliography – list all references, both written and verbal, in alphabetical order. State author (last name first), date, title of reference (underlined), publisher, place of publication and reference page(s). Example: Gray, A, et al. 2005. Physics, a contextualized approach, Oxford, Brittain. P. 34 50.
- Use a variety of sources.

Description of practical component of investigation

Describe experimental procedure as follows:

- Problem statement and hypothesis – state problem from a specific context
- Aim – what outcome do you want to master
- Apparatus – list all that will be needed
- Method/investigation/research content – test the hypothesis with a carefully selected scientific method
- Results/measurements/observation – record results logically, respond to questions on project, analyse/interpret results and present them in appropriate way (graphically as graphs, in tables, etc.)
- Conclusion – use results to draw conclusions. Accept/reject hypothesis. Stae solution o problem/hypothesis

Criteria involving experimental procedure

Experimental procedure should be valid.
Variables must be identified
Control experiments should increase validity of results obtained
Unsuccessful attempts should be included and explained

Analysis
Report on any problems encountered. Include graphs, calculations and tables.

Conclusion
Outline conclusions arrived at based on experimental evidence

Bibliography
Acknowledge all references

Work should be presented neatly and logical/orderly

Safety
If experimental work is involved, correct safety procedures should be followed.

Collection of information

Use books, magazines, internet
Do experiments
Identify variables – dependent and independent
Interview people knowledgeable in the relevant topic
Do a survey by means of a well-formulated questionnaire

Marking criteria

Draw up rubric with criteria for
Communication (interview), display, poster
Project notes
Scientific thought/language/correctness/application to technology, society and environment
Creative ability
Presentation/communication

If questions are asked, make use of a memo.

Discuss the assessment instrument with the learners when given instructions, so that they understand how they will be assessed.

ANNEXURE G

GAUTENG DEPARTMENT OF EDUCATION
PHYSICAL SCIENCE GRADE 12: 2008

LEARNER PROGRAMME OF ASSESSMENT

Name of School: _____

Name of Educator: _____

Name of moderator: _____

School of moderator: _____

Does the learner portfolio indicate/include	**Yes**	**No**	**Comments**
Table of contents			
Ownership of learner portfolio			
Programme of assessment recording sheet			
Record sheet for each task			
Chemistry practical included			
Physics practical included			
All practical marked			
Research/ Project included			
Research /Project marked			
Two controlled tests included			
Two controlled tests marked			
June exam scripts marked			
Preparatory exam script available			
Preparatory exam script marked			
Evidence of moderation by HOD			
Evidence of moderation by cluster			

Signature of Moderator: _____ **Date:** _____

Signature of Cluster Leader: _____ **Date:** _____

ANNEXURE H

DECLARATION OF OWNERSHIP OF PORTFOLIO

NAME													
EXAMINATION NUMBER													
CENTRE NUMBER													

DECLARATION OF OWNERSHIP OF WORK DONE IN THIS PORTFOLIO

Declaration by the Educator:

I declare that all the work done in this portfolio is the sole work of this learner, unless s/he was required to work within a group.

Signed: _____ Date: _____

Declaration by the Learner:

I declare that all the work done in this portfolio is my own work. Unless I have been required to work as part of a group.

Signed: _____ Date: _____

ANNEXURE I

GAUTENG DEPARTMENT OF EDUCATION
PHYSICAL SCIENCE GRADE 12: 2008

EDUCATOR PROGRAMME OF ASSESSMENT

Name of School: _____

Name of Educator: _____

School of moderator: _____

Name of moderator: _____

Does the educator portfolio indicate/ include	**Yes**	**No**	**Comments**
Table of contents			
Detailed recording sheet **Annexure M**			
School based moderation forms			
Cluster based moderation forms			
Chemistry practical included			
Physics practical included			
Memo for all practical			
Rubrics for all practical			
Practical of a suitable level			
Instruction sheet for Research /Project			
Memo& rubric for Research / Project			
Two controlled tests available			
Memo for controlled tests			
June exam question paper & memo			
Preparatory exam question paper available			
Preparatory exam memo available			
Evidence of moderation by HOD			
Evidence of moderation by cluster			

Signature of Moderator: _____ **Date:** _____

Signature of Cluster Leader: _____ **Date:** _____

ANNEXURE J

RECORDING MARK SHEET FOR TASKS

PHYSICAL SCIENCE

Name of school:		
Name of learner:		
Assessment task (tick the appropriate box)	**Practical investigation (Chemistry/ Physics)**	
	Research task/project	
	***Controlled test**	
	***June exam**	
	***Trial exam**	
Names of group ***Not for Controlled test, June Exams & Trial Exams**		
Date:		

RECORDING OF SCORES

Tasks	**Max mark**	**Learner's mark**
Practical investigation (Chemistry/ Physics)		
Research task/project		
Controlled test		
***June exam**		
Trial exam		
TOTAL		

Name of educator: _____

Signature of educator: _____

ANNEXURE K

PROGRAMME OF ASSESSMENT MARK SHEET
PHYSICAL SCIENCE

NAME OF SCHOOL: _____ CENTER NUMBER: _____

NAME OF LEARNER: _____ GRADE: _____

Task	Assessment task	Max mark	Learner's mark	Total weighting	Converted mark	Moderated mark
	E.g.	**50**	**25**	**20**	**$\frac{25}{10}$ X 20 = 50**	
TASKS 1 - 7 (25%)	**Physics practical investigation (LO_1 focus)**			**20**		
	Chemistry practical investigation (LO_1 focus)			**20**		
	Research task/ Project (LO_3 focus)			**20**		
	Controlled test 1			**5**		
	Controlled test 2			**5**		
	June exam			**10**		
	Trial exam			**20**		
TOTAL MARKS				**100**		

Moderators comments: _____
_____
_____
_____
_____

Moderator's name:_____ Educator's name: _____

Moderator's signature: _____ Educator's signature: _____

ANNEXURE L

EVIDENCE OF CLUSTER MODERATION

DEPARTMENT OF EDUCATION

Learning area					
Grade					
Name of school					
Name of educator					
Name of moderator					
Cluster moderation/Date		**1st cluster moderation**	**2nd cluster moderation**	**3rd cluster moderation**	**4th cluster moderation**
Names of learners		**1.**			
		2.			
		3.			
		4.			
Tasks completed		**1.**			
		2.			
		3.			
		4.			
Working mark sheet included					
Aspects need attention:					
Signatures	**Educator:**				
	Moderator:				

ANNEXURE M

RECORDING MARKSHEET 2008
PHYSICAL SCIENCE GRADE 12

NAME OF SCHOOL: _____ CENTER NO: _____

No	Surname	Name	Practical investigation Physics (20)	Practical investigation Chemistry (20)	Research task/ project (20)	Control test 1 (5)	Control test 2 (5)	June exam (10)	Preparatory exam (20)	Total CASS (100)
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										

Print name of educator: _____ **Print name of HOD: _____**

Signature of educator: _____ **Signature of HOD: _____**

Date:_____

ANNEXURE N

Example of a rubric for the research project				
LO 1 / 16 * (35 %)	0	1	2	3
AS 2 Writing a Scientific report	Scientific report not done / done poorly- lacks clarity, order and continuity.	Scientific report is simple including only obvious aspects of the activity	Scientific report is clear and ordered to include important aspects of the activity	Scientific report is detailed and extensive and clearly ordered to include all aspects of the activity.
AS 1 Drawing Conclusions	No conclusion / Conclusion inconsistent with data.	Simple correct conclusions are drawn from data.	Correct and insightful conclusions are clearly drawn from the data.	
AS 2 Collecting, recording and tabulating Data	No proof of data collected, no tabulating of data.	Little data collected, table makes no sense.	Data collected, simple table made.	Data collected accurately, data recorded in detail and presented in a well designed table.
AS 1 Interpretation of data	No interpretation done.	Unable to interpret data.	Can make a simple and mostly correct interpretation.	Good interpretation, making optimal sense and showing in-depth understanding.
AS 4 Communicating and presenting information.	Information not communicated at all.	Information not evident/understandable	Information evident and understandable.	Information easily understood and insightful
AS1 Media resources.	No resources listed.	Limited resources listed	Variety of resources listed.	
LO 2 /9 *(15%)				
AS 2 Indicating and explaining relationships	No correlation between Advantages and disadvantages.	Advantages and disadvantages are given but they are not relevant for this task.	Advantages and disadvantages given and relevant.	Advantages and disadvantages are complete and insightful. Indicates understanding.
AS 3 – Apply scientific knowledge	Only used a few (less than five) alternative sources in the task.	Used five alternative resources, but knowledge not clear.	Used the five resources and showed some understanding.	Used five or more resources that clearly shows understanding of each resource.
AS 3 – Apply Scientific knowledge to formulate an opinion	No opinion given.	Opinion given, no reasons given.	Opinion given, some relevant reasons given.	Opinion given. Very clear reasons are given to support the opinion.
LO 3 /21`*(50%)				
AS 1 Science's inability to stand in isolation. – Cultural differences and viewpoints.	No indication of sensitivity towards cultural differences and viewpoints.	Shows some indications of knowledge of cultural differences and viewpoints.	Displays sensitivity towards cultural differences and viewpoints.	Explains some cultural differences and viewpoints.
AS 2 Geographical limitations.	No proof of understanding that the geography of the area can limit the type of resource that can be used.	Some proof of understanding that the geography of the area can limit the type of resource that can be used.	Proof of understanding that the geography of the area can limit the type of resource that can be used.	State and explain the understanding that the geography of the area can limit the type of resource that can be used.
AS 2 Affordability of resources in areas and possible job creation.	No proof of understanding.	Some proof of understanding	Proof of understanding but no explanation.	State and explain the understanding of these concepts.
AS 3 Pollution aspect of these alternative resources.	No proof of understanding.	Some proof of understanding	Proof of understanding but no explanation.	State and explain the understanding of pollution.
AS 3 Cost to limit pollution	No proof of understanding.	Some proof of understanding	Proof of understanding but no explanation.	State and explain the understanding of these concepts.
AS 1 Renewable resources	No proof of understanding.	Some proof of understanding	Proof of understanding but no explanation.	State and explain the understanding of these concepts.
AS 3 Use the answers from the table to show that it will benefit a specific community	No proof of understanding.	Some proof of understanding	Proof of understanding but no explanation.	State and explain the understanding of these concepts.

Adapted from MaCMillan textbook, Grade 11

% indicated not policy but meant to indicate the main LO focus of the task.