



ASSESSMENT & EXAMINATIONS

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NSC 2011 CHIEF MARKER'S REPORT

SUBJECT	ENGINEERING GRAPHICS AND DESIGN
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PAPER	2
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DATE OF EXAMINATION:	NOVEMBER 2011	DURATION:	3 HRS
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SECTION 1:

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

To answer this question you have to look at the province in districts. Some districts performed well while other districts under performed. Some centres within districts were the exception to the rule. The majority of candidates performed poorly. This can be attributed to a few factors, namely: (a) inadequately trained teachers, (b) pupils not interested, (c) pupils not having the correct instruments. If we have to look at the performance of the candidates (40% fail, 20% pass with level 2, 15% pass with level 3) then it is clear that the province, to say it mildly, under performed.

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 (Analytical)

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

- Question 1.1 - 1.8: These questions were lower order cognitive questions and the majority of candidates obtained a 75% and above mark for this section.
- Question 1.9 - 1.15: These questions were more lower to medium order cognitive questions and the candidates had to know some associated technical/mechanical/drawing terminology to answer these questions. The majority of candidates obtained a mark lower than 40% for this section of question 1.
- Question 1.16A-E: This question was testing the candidate's ability to find five dimensions on the views. The majority of the candidates obtained an average mark of 50% for this question. Some candidates could not find any of the answers.
- Question 1.17: The candidate had to insert the cutting plane on view 2. Although this question has been asked in just about every examination the candidate's response was extremely poor. By turning to question 4 they would have found an example of



what is expected of them.

- Question 1.18: Some medium to higher order insight into loci was needed to answer this question. This question was answered extremely poorly. The majority of candidates did not attempt this question.
- Question 1.19: This is another question that has been asked regularly. Most candidates attempted this question with a 75% success rate. Some candidates did not attempt the question at all.
- Question 1.20: This question was answered extremely poorly. The majority of candidates did not attempt 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.

The reading/understanding skills of the learners leave much to be desired.

- The lack of knowledge of technical terminology was a big factor in the inability of the candidates to answer question 1.9 - 1.15.
- The inability to read/understand a drawing was evident in the wrong answers/dimensions that was given in question 1.16.
- Question 1.17 and 1.19 were asked in previous examinations and they were still very poorly answered, that shows that teacher do not consult previous papers when they do their lesson planning.
- A very few candidates seemed to understand question 1.13 incorrectly. After some deliberation, between the markers, senior marker, chief marker and marking moderator, the decision was made that question 1.13 was stated unambiguously, and that the candidates could have thought that, the physical size of the thread was asked and not the M-size of the component. Because this was not discussed at the memo discussion, no change to the memorandum was made.

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

- Teachers must make use of the SABS and DBE approved textbooks to obtain the correct terminology for the subject.
- Exercises in the reading of drawings must be done to improve the candidate's ability to find dimensions.
- Teachers must make use of old examination papers to guide the candidates in how to answer the analytical question.
- Teachers must teach their candidates how to write dimensions, e.g. A/F97, Ø50, etc.
- Candidates must answer questions correctly, e.g. if the question states that the projection symbol must be drawn in freehand, then it means freehand, and it will in future be marked as a drawing method, which means no instrument drawing will then be accepted. The opposite is also true; if instruments are required freehand drawings will not be accepted as per decision at the memo discussion where all provinces were present. Time management is essential to complete all the questions.

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

The responses from candidates indicate that many of them do not understand the terminology and language that is used in the paper. The answers would reflect that they did not understand what was asked, e.g. names become dates, dimensions become line types, etc.

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

- This is the type of question that you give to your pupils and they have to take it home and research the answers at home.

QUESTION 2.1 (Helix)

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

- This question was answered extremely poorly. Most candidates did not even attempt the question. Candidates could obtain 37% for this question by just copying and drawing the constructions. Helix's all have the same method and construction, so even if the candidate did not understand what the helix looked like he should have obtained at least 37% of the mark.

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

The reading/understanding skills of the learners were again a problem with this question.

- Candidates did not even copy the given detail correctly.
- Most candidates did not insert the centre line for the helix.
- Some marks were forfeited when candidates used the wrong starting point.
- The question asked for two turns of the helix and many candidates drew only one or one and a half turns.
- Candidates also forfeited marks for the wrong direction of the helix (left- or right hand).

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

- Exercises in the reading of drawings must be done to improve the candidate's ability to understand what is asked of them to draw.
- Teachers must make use of past exam papers to help the candidates to understand how the questions could be asked.

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

- The fact that so many candidates did not even attempt this question makes one wonder if this part of the syllabus have been covered in class.

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

- Teachers need to do more exercises in helices. Pupils need to understand the method of determining the helix. If a pupil can do one helix he should be able to do any helix at school level. Divide circle in 12 parts, divide pitch into 12 parts, project horizontal and vertical lines and look at profile of helix and determine the loci.

QUESTION 2.2 (Cam)

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

<ul style="list-style-type: none"> • Of the two questions on loci, the cam was the question that was answered with the most success. • Most of the candidates could get marks for constructions and the displacement diagram.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
<p>Although the question was not poorly answered some common errors were:</p> <ul style="list-style-type: none"> • The candidates did not indicate the direction of rotation or they indicated it incorrectly. • In the displacement diagram the start and end was swapped around. • Candidates did not use the given horizontal scale to draw the displacement diagram. • Candidates did not label the displacement diagram.
(c) Provide suggestions for improvement in relation to Teaching and Learning
<ul style="list-style-type: none"> • Teachers must make use of past exam papers and show candidates that labels, direction arrows, etc. is marks that are forfeited if they do not indicate them on their answers.
(d) Describe any other specific observations relating to responses of learners
<ul style="list-style-type: none"> • Some candidates indicate the direction with an arrow as clockwise and they also label their degrees clockwise, which is incorrect. • The question stated that the cam rotates at constant velocity, which means that the cam profile (graph) can only display
e) Any other comments useful to teachers, subject advisors, teacher development etc.
<ul style="list-style-type: none"> • Teachers need to show their learners how to project from a given profile to a displacement diagram.

QUESTION 3

(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
<ul style="list-style-type: none"> • The main body of the question was well answered by the majority of the candidates. • Although many candidates attempted this question with relatively good results, there were still some problem areas.
(b) Why was the question poorly answered? Also provide specific examples, indicate common errors committed by learners in this question, and any misconceptions.
<ul style="list-style-type: none"> • Many candidates could not construct the pentagon. This is work that should have been covered in grade 10. • Candidates could not determine the measurement for the 15° angle at the top of the drawing. Again this is work that should have been cover in the previous grades. • Candidates positioned their drawings incorrectly and that meant they forfeited some marks. • The question stated clearly that all constructions should be shown; some candidates rubbed out their constructions. They lost marks if they did that. • Construction of the isometric circle was also a problem to many candidates.

(c) Provide suggestions for improvement in relation to Teaching and Learning
<ul style="list-style-type: none"> Teachers must make use of previous exam papers to enlighten candidates on how the question is asked and what is expected of them. More exercises in isometric must be done in the previous grades to help the candidates to improve on their marks.
(d) Describe any other specific observations relating to responses of learners
<ul style="list-style-type: none"> Some candidates did not place point A as the lowest point of the drawing as required.
e) Any other comments useful to teachers, subject advisors, teacher development etc.
<ul style="list-style-type: none"> Pupils must practice isometric drawings in all grades. Teachers must show pupils how to see when it is necessary to construct an auxiliary view and how to copy that view to isometric. What are isometric lines and what are non-isometric lines.

QUESTION 4
(a) General comment on the performance of learners in the specific question. Was the question well answered or poorly answered?
<ul style="list-style-type: none"> Most candidates attempted this question and the marks for this question were average. Some centres still did very 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.
<ul style="list-style-type: none"> Positioning of the offset arm, tie rod and the fork according to point P and S seemed to be a problem to many candidates. This could be because they did not read the question. The length of the fork and the offset arm were incorrectly drawn by some candidates. Many candidates left out the screw thread on the offset arm and fork. Many of the candidates do not know their rules of sectioning, e.g. (a) Sectioning of the web/rib, (b) not changing the direction of sectioning for adjacent parts, (c) not sectioning the cross cut of the dowels, (d) when to section a thread. Construction of the nut was also problematic. No constructions were shown and candidates forfeited marks. A few candidates also did not draw the right view as requested. Candidates also drew the views in first angle orthographic projection instead of third angle. Candidates again did not insert any centre lines and they forfeited 4 marks.
(c) Provide suggestions for improvement in relation to Teaching and Learning
<ul style="list-style-type: none"> Teachers must make use of the SABS and DBE approved textbooks to obtain the correct rules of sectioning. Exercises in the reading of drawings must be done to improve the candidate's ability to fit the different parts together. Teachers must make use of old examination papers to guide the candidates in how to answer the assembly question.

<ul style="list-style-type: none"> Teachers must make sure that the candidates understand the rules of sectioning and do relevant exercises to improve their understanding.
(d) Describe any other specific observations relating to responses of learners
<ul style="list-style-type: none"> Many candidates did not use the recognized method of constructing the nut and it seems as if they were told to just draw a rectangle and colour in the corners to make it appear as if a proper nut has been constructed.
e) Any other comments useful to teachers, subject advisors, teacher development etc.
<ul style="list-style-type: none"> In grade 10 pupils are required to section simple castings. Let the grade 10 pupils do the sectioning of one of the components of the grade 12 exam papers. Do not let them assemble the components, but let them section all the parts separately. When they get to grade 12, they will not see it as an impossible task.

SIGNATURE OF CHIEF MARKER: _____



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