



EXAMINER'S REPORT

SUBJECT:	ENGINEERING GRAPHICS AND DESIGN
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GRADE:	12	PAPER:	2
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DATE OF EXAMINATION:	1 Dec 2008	DURATION:	3 HRS
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1. ANALYSIS OF QUESTION BY QUESTION PERFORMANCE OF THE CANDIDATES

Give a detailed account of how the candidates performed in each question. In doing this, the following steps should be followed:

- 1.1 The aim/objective for setting the question (what skills, knowledge, values and attitudes were being tested by asking the question)
- 1.2 Relevance or relation of the question to the Los and ASs.
- 1.3 How did the candidates perform in the question?
- 1.4 Where and how did candidates lack or fail in giving an appropriate answer to score high marks in the question?

QUESTION 1

Skills:	Analysing data on a drawing; Interpreting data
Knowledge:	Drawing principles as contained in SANS code of Practice as related to complex Mechanical drawings. Single and multi-view drawing principles: 1st and 3rd angle orthographic projection complex assemblies detail drawings Principles of sectioning: multi-view drawings Single and multi-view drawing principles: limits & fits, tolerances, measurement and surface textures,
The question relates to:	LO 1: ASS 3 LO3: ASS 1, 3,5 LO4: ASS 1, 2, 4, 7
Performance:	Max mark from sample: 20

	<p>Average: 8.07</p> <p>Min: 0</p> <p>Generally the question was not answered well.</p> <p>All candidates attempted the question</p>
Shortcomings of candidates	<p>Knowledge of the components and features of components.</p> <p>Text and numbers must be printed in capital letters.</p> <p>Free hand sketches must adhere to SANS and be neat.</p> <p>Arrows for 3rd angle OP and the labelling</p>

QUESTION 2

Skills:	Analysing written information; Interpreting information, drawing skills
Knowledge:	<p>Drawing principles as contained in SANS code of practice as related to complex Mechanical drawings.</p> <p>Single and multi-view drawing principles:</p> <p>1st and 3rd angle orthographic projection</p> <p>detail drawings</p> <p>Loci of points on the components of mechanisms.</p>
The question relates to:	<p>LO3: ASS 1, 6</p> <p>LO 4: ASS 1, 5, 7</p>
Performance:	<p>Max mark from sample: 36</p> <p>Average: 13</p> <p>Min: 0</p> <p>Generally the question was answered well.</p> <p>Most candidates answered this question.</p>
Shortcomings of candidates	<p>Method of drawing cams with roller followers.</p> <p>Interpreting the scale and height of the graph.</p> <p>Drawing the follower detail.</p> <p>Rotation direction of the cam.</p> <p>Drawing the roller positions.</p> <p>Centre lines are not drawn in.</p>

QUESTION 3.

Skills:	Analysing drawn information; Interpreting information, drawing skills
Knowledge:	Drawing principles as contained in SANS code of practice as related to complex Mechanical drawings. Single and multi-view drawing principles: 1st and 3rd angle orthographic projection detail drawings Pictorial drawings principles: isometric Principles of sectioning: pictorial drawings
The question relates to:	LO3: ASS 1, 4,5 LO 4: ASS 1, 3, 4,7
Performance:	Max mark from sample: 39.5 Average: 18.3 Min: 0 Generally the question was answered well. Most candidates answered this question.
Shortcomings of candidates	Auxiliary views are not used to draw the hexagon. Drawing of isometric circles. Centre lines are not indicated. Placement of the Isometric in relation to the given point A.

QUESTION 4

Skills:	Analysing drawn information; Interpreting information, drawing skills
Knowledge:	Drawing principles as contained in SANS code of practice as related to complex Mechanical drawings. Single and multi-view drawing principles: 1st and 3rd angle orthographic projection detail drawings complex assemblies Pictorial drawings principles: isometric Principles of sectioning: multi-view drawing drawings
The question relates to:	LO3: ASS 1, 2, 3, 5 LO 4: ASS 1, 4,7
Performance:	Max mark from sample: 95.5 Average: 43 Min: 0 Generally the question was answered well.

	Most candidates answered this question.
Shortcomings of candidates	<p>Centre lines are not indicated.</p> <p>Hatching or not of features.</p> <p>Time wasted by drawing of unnecessary views.</p> <p>Ratios of nuts and screw thread detail.</p> <p>Not sectioning the assembly.</p> <p>Not drawing the assembly but loose parts.</p> <p>Solids that are incorrectly hatched such as the pulley.</p>

7. ANY ADVICE THAT YOU COULD GIVE TO EDUCATORS IN HELPING THE LEARNERS TO REACH THE EXPECTED LEVEL.

Question 1: When answering the analytical question the candidates must print the answers in capital letters.

When writing dimensions the symbols must be written down as well e.g. $\varnothing 42$, 213PCD, 12 mm, M33

Free hand sketches must be neat and follow SANS.

Question 2: When drawing cams with roller followers the minimum height from the centre of the roller to the minimum cam radius is critical. The baseline of the graph and the centre of the roller must be in line. Attention must be paid to the scale to which the graph is drawn, don't only use 10mm intervals. The follower must be drawn on the 0° line of the cam profile. Pay attention to the detail of the follower. Candidates don't draw the centre lines according to SANS.

Question 3: Candidates don't draw the centre lines according to SANS. To draw the hexagon, an auxiliary view must be drawn to determine the isometric points. Candidates must practice the correct placement of the isometric based on the information in the orthographic views. The method for drawing isometric circles should be practiced often.

Question 4: Centre lines must be drawn in.

Thread detail ratios need attention: The across flats size for drawing nuts is $1,5 \times \text{dia}$. The thread depth is $0,1 \times \text{dia}$. The thickness of a nut is $0,8 \times \text{dia}$ (Dia = M###).

Principles of sectioning need attention:

The following items are NOT hatched when sectioning items on their lengthwise axis:

Shafts and Axles (except where keys and key ways are partially sectioned to show detail).

Fasteners - Nuts, bolts, Rivets, Washers etc.

Keys

Thread details in sectioned parts.
 Hatching of parts when the sectioning plane is perpendicular to the axis.
 When using stencils the construction should still be shown.

8. ANY OTHER COMMENTS

Candidates must staple the questions in the correct order.
 The question should be read before answering the question.
 READ the assessment criteria before answering the question.
 Candidates must use sharp pencils to draw, clean drawing equipment.
 SANS standards must be adhered to.
 Construction lines should NOT be erased.
 Candidates should plan the time they spend on each question. Roughly 1,1 mark per minute.
 A2 sheets may be cut on the fold of the paper when answering the paper.
 Exemplars and provincial papers should be use in classwork to prepare the candidates.

SIGNATURE OF EXAMINER/MODERATOR: _____



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