



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

ENGINEERING GRAPHICS AND DESIGN P2
NOVEMBER 2011

MARKS: 100

TIME: 3 hours

This question paper consists of 6 pages.

INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions.
2. Answer ALL the questions.
3. ALL drawings are in third-angle orthographic projection, unless stated otherwise.
4. ALL drawings must be drawn to scale 1 : 1, unless stated otherwise.
5. ALL the questions must be answered on the QUESTION PAPER as instructed.
6. ALL the pages must be restapled in numerical sequence, irrespective of whether the question was attempted.
7. Time management is essential in order to complete all the questions.
8. Print your examination number in the block provided on every page.
9. Any details or dimensions not given, must be assumed in good proportion.
10. ALL answers must be drawn accurately and neatly.

FOR OFFICIAL USE ONLY										
QUESTION	MARKS OBTAINED			½	SIGN	MODERATED			½	SIGN
1										
2										
3										
4										
TOTAL										
	2	0	0			2	0	0		

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:
CENTRE NUMBER
CENTRE NUMBER
EXAMINATION NUMBER
EXAMINATION NUMBER





to

QUESTION 2: LOCI

NOTE: Answer QUESTIONS 2.1 AND 2.2.

2.1 AUGER

Given:

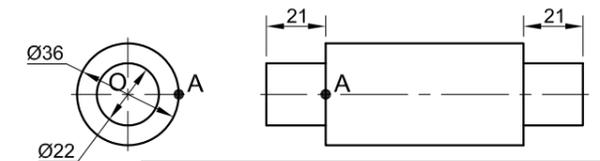
- The front view and left view of the shaft of an auger
- A reference point, labelled O, to help with the placement of the answer

Specifications:

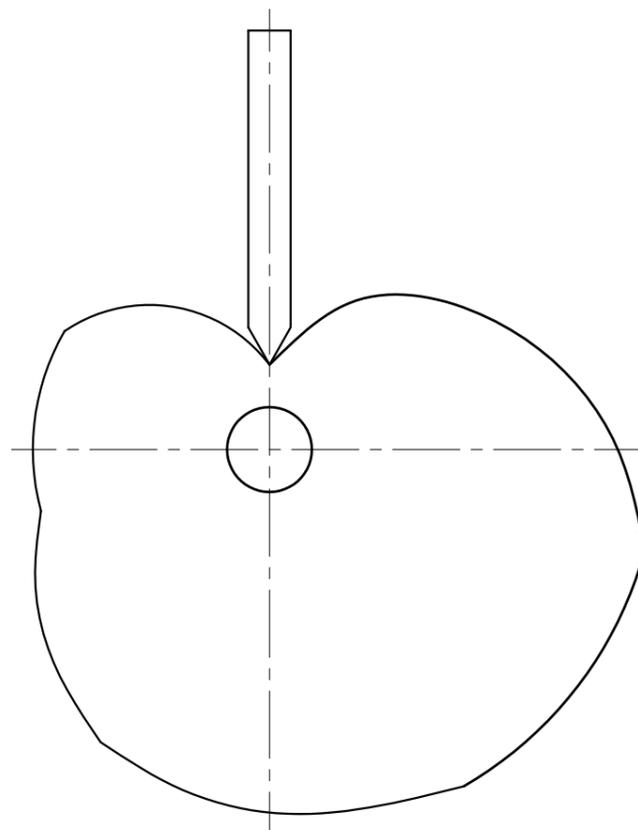
- The pitch (ONE full turn) is 35 mm.
- The outer diameter of the auger is Ø80.

Instructions:

- Starting at point A, draw, to scale 1 : 1, TWO turns of a right-hand auger on the given views of the shaft.
- Show ALL necessary construction.
- NO hidden detail is required. [27]



ASSESSMENT CRITERIA			
GIVEN	5		
CENTRE LINES + CONSTR'	5		
HELIX/AUGER	17		
SUBTOTAL	27		



2.2 CAM

Given:

A cam profile with a wedge-ended follower

Specifications:

The cam rotates with constant velocity in a clockwise direction, imparting uniform motion to the follower.

Instructions:

- Draw the displacement graph for the cam, using a horizontal scale of 8 mm equal to 30°.
- Indicate the direction of rotation on the cam profile.
- Label the displacement graph and indicate the scale used.
- Show ALL necessary construction. [12]

ASSESSMENT CRITERIA			
DISPLACEMENT GRAPH	7		
CONSTRUCTION	3		
LABELS + ARROW	2		
SUBTOTAL	12		
TOTAL	39		

EXAMINATION NUMBER			
EXAMINATION NUMBER			3





QUESTION 3: ISOMETRIC DRAWING

Given:

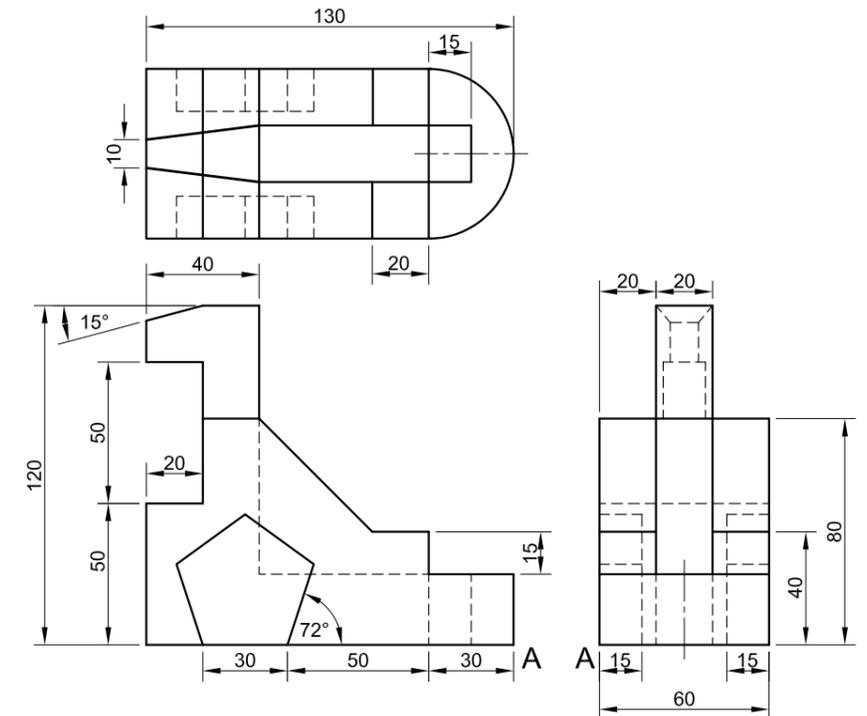
- The front view, top view and right view of a safety clip with TWO regular pentagonal slot holes
- The position of point A on the drawing sheet

Instructions:

Using scale 1 : 1, convert the orthographic views of the safety clip into an isometric drawing.

- Make A the lowest point of the drawing.
- Show ALL necessary construction.
- NO stencils may be used.
- NO hidden detail is required.

[40]



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A

ASSESSMENT CRITERIA			
AUXILIARY VIEWS + CIRCLE CONSTRUCTION + PLACE	6		
ISO' ARCS + PENTAGONAL HOLE	11		
ISO' + NON-ISO' LINES	23		
TOTAL	40		
EXAMINATION NUMBER			
EXAMINATION NUMBER			4





ASSESSMENT CRITERIA				
SECTIONAL FRONT VIEW				
1	SHAFT A	2		
2	BUSH A	1		
3	OFFSET ARM	7½		
4	TIE ROD	9		
5	M12 NUT	8		
6	SHAFT B	2		
7	DOWEL	1		
8	FORK	10½		
9	BUSH B	1		
H	HATCHING	12		
SUBTOTAL		54		
RIGHT VIEW				
3	OFFSET ARM	5½		
4	TIE ROD	5		
5	M12 NUT	4½		
8	FORK	6		
SUBTOTAL		21		
GENERAL				
1	CENTRE LINES	4		
2	CUTTING PLANE + TITLE	5		
3	ASSEMBLY	7		
SUBTOTAL		16		
TOTAL		91		
EXAMINATION NUMBER				
EXAMINATION NUMBER				
				6

