

ISEBE LEMFUNDO LEMPUMA KOLONI  
EASTERN CAPE EDUCATION DEPARTMENT  
OOS-KAAP ONDERWYSDEPARTEMENT

NATIONAL  
SENIOR CERTIFICATE

GRADE 11

ENGINEERING GRAPHICS AND DESIGN P2

NOVEMBER 2015

EXAMINATION

MARKS: 200

TIME: 3 hours

This question paper consists of 6 pages.

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★ I G R D S E ★

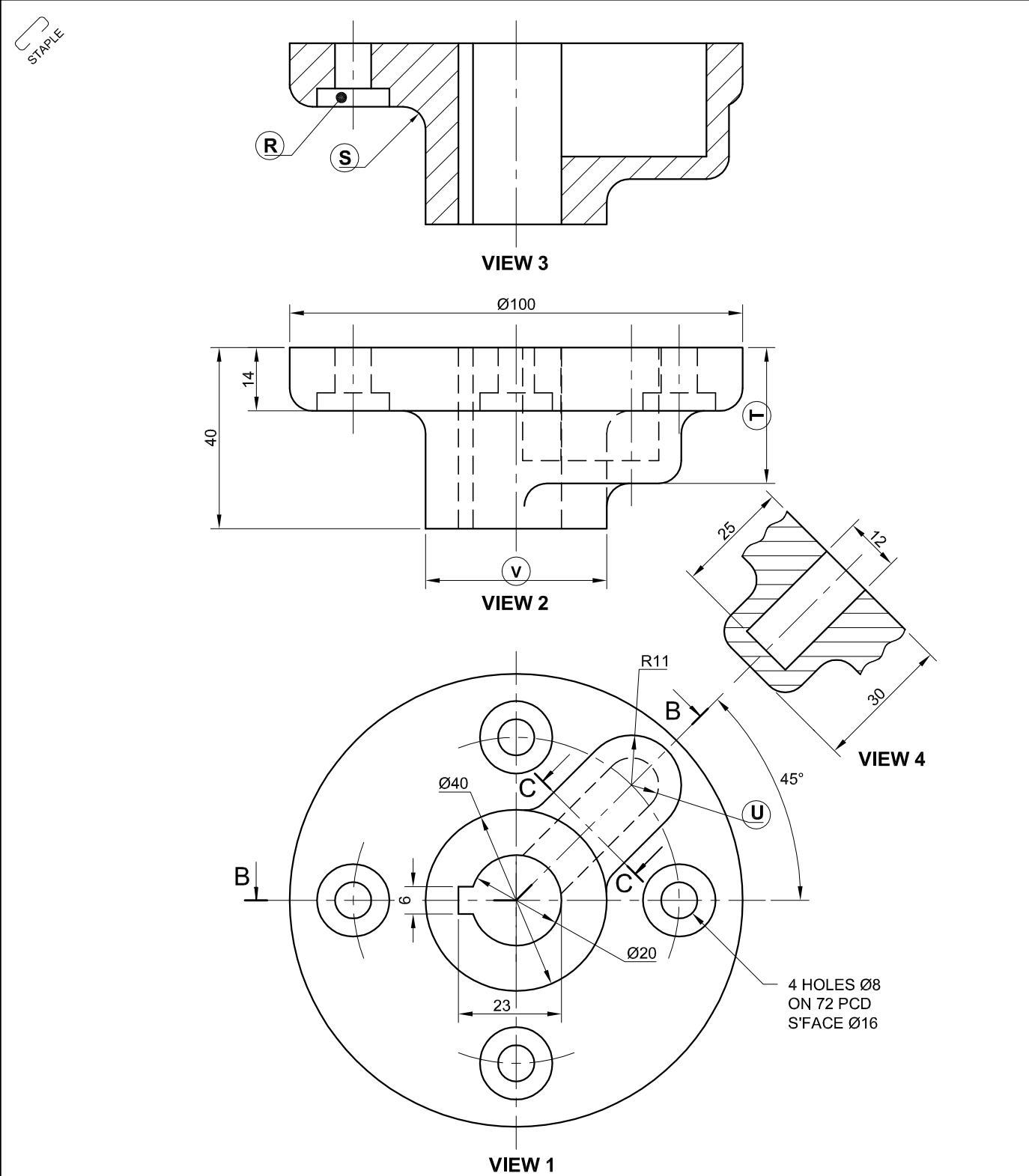
## INSTRUCTIONS AND INFORMATION

1. The paper consists of FOUR questions.
2. Answer ALL the questions.
3. All drawings must be drawn to scale 1:1, unless otherwise stated.
4. The questions must be answered on the answer sheets provided.
5. All the answers sheets must be re-stapled in numerical sequence and handed in irrespective of whether the question was attempted or not.
6. Careful time management is essential in order to complete all the questions.
7. Print your name in the block provided on every answer sheet.
8. All answers must be drawn accurately and neatly.
9. Any details or dimensions not given must be estimated in good proportion.

FOR OFFICIAL USE ONLY									
								MODERATED MARK	
1									
2									
3									
4									
TOTAL									
	2	0	0						

FINAL CONVERTED MARK	CHECKED BY
100	

COMPLETE THE FOLLOWING:	
NAME	
NAME	
SCHOOL	
SCHOOL	



QUESTION 1: ANALYTICAL (MECHANICAL)

**Given:**  
Four views of a crank disc with a title block and a table of questions.

**Instructions:**  
Complete the table below by neatly answering the questions, which all refer to the accompanying drawings and title block.  
Show all calculations. [22]

QUESTIONS		ANSWERS		
1	Who approved the drawing?		1	
2	What SI unit was used to produce the drawing?		1	
3	Which drawing method was used to create these drawings?		1	
4	What is the web address of the design company?		1	
5	How many sets of drawings are there?		1	
6	What is the tolerance allowed on the dimensions?		1	
7	What is feature R called?		1	
8	What is the size of the arc marked S?		1	
9	Determine the dimension at T?		1	
10	Determine the dimension at U?		1	
11	Determine the dimension at V?		1	
12	What change did Keano recommend?		1	
13	What is the purpose of the change that Keano recommended?		2	
14	What type of section is shown on view 3?		1	
15	What type of section is shown on view 4?		1	
16	What do the letters P.C.D. stand for?		1	
17	How many Ø8 holes need to be drilled in the disc?		1	
18	In the box below (ANSWER 18), draw, in neat freehand, the symbol for the projection system used.		4	
TOTAL			22	

22/09/2014		KEANO	INSERT KEYWAY	1
ALL DIMENSIONS ARE IN MILLIMETRES.		DATE	CHANGED BY	№
UNLESS OTHERWISE SPECIFIED, TOLERANCES ON DIMENSIONS ARE ± 0,35.	DRAWN BY: John	DRAWING SET NO. 2 OF 2		MATERIAL: CAST IRON
	DATE: 15/09/2014	FILE NAME: BASE-53-2014		HEAT TREATMENT: NONE
ALL UNSPECIFIED RADII ARE R5.	CHECKED BY: Ann	PRECISION CAST MANUFACTURING BELL STREET SOMERSET EAST 5850 www.precision.co.za		
	DATE: 18/09/2014			
DRAWING PROGRAM: AUTOCAD 2015	APPROVED BY: Peter	CRANK DISC		
	DATE: 03/10/2014			
SCALE: 1 : 2				

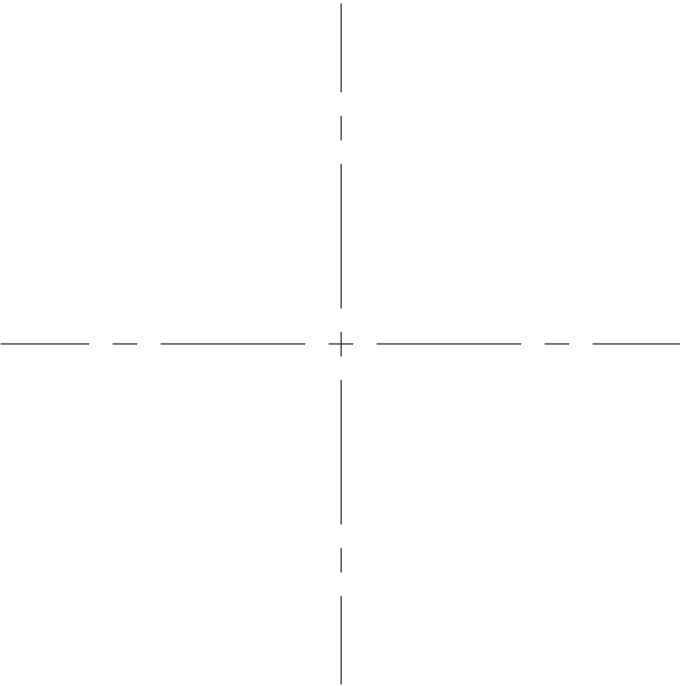
ANSWER 18

SYMBOL

NAME

NAME

2



QUESTION 2.1: HELIX (AUGER)

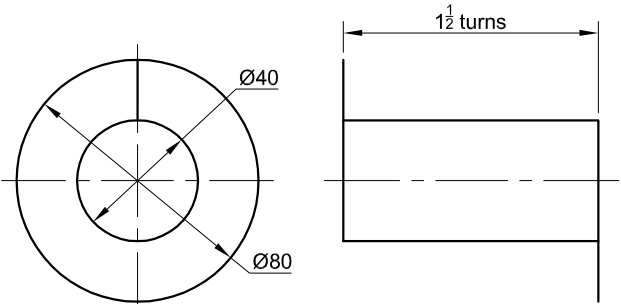
Given:

- The left view and incomplete front view of a right handed auger.
- The centre lines for the left view as a reference point.

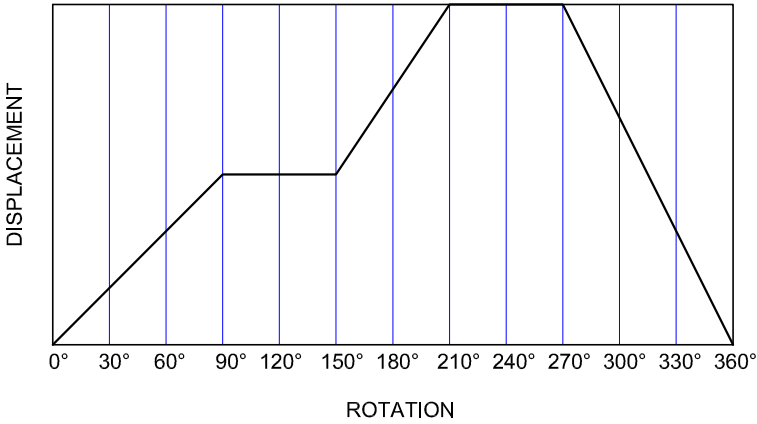
Instructions:

- Copy the left view and construct the front view of a one and a half turn, right handed auger.
- The pitch is 48 mm.
- Start at the left top position.
- Show ALL necessary construction.

[24]



ASSESSMENT CRITERIA				
1 COPY + CONSTR' + DIRECTION + CL	6			
2 OUTSIDE HELIX	9			
3 INSIDE HELIX	6			
4 SHAFT + ENDS	3			
SUB TOTAL	24			



QUESTION 2.2: LOCI (CAMS)

Given:

- The displacement graph of an industrial cam.
- The minimum cam radius is 10 mm.
- The cam rotates clockwise.

Instructions:

- Project and draw the cam profile that would generate the given motion. Indicate the degrees on the cam profile. The arrow indicating the direction of rotation must be shown.

- Show ALL necessary construction.

[18]

ASSESSMENT CRITERIA				
1 ARROW + MIN RADIUS + DEGREE + CL	4			
2 CONSTRUCTION	3			
3 CAM POINTS	6			
4 CURVE + QUALITY	5			
SUB TOTAL	18			
TOTAL	42			
NAME				
NAME				3



QUESTION 3: ISOMETRIC DRAWING

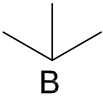
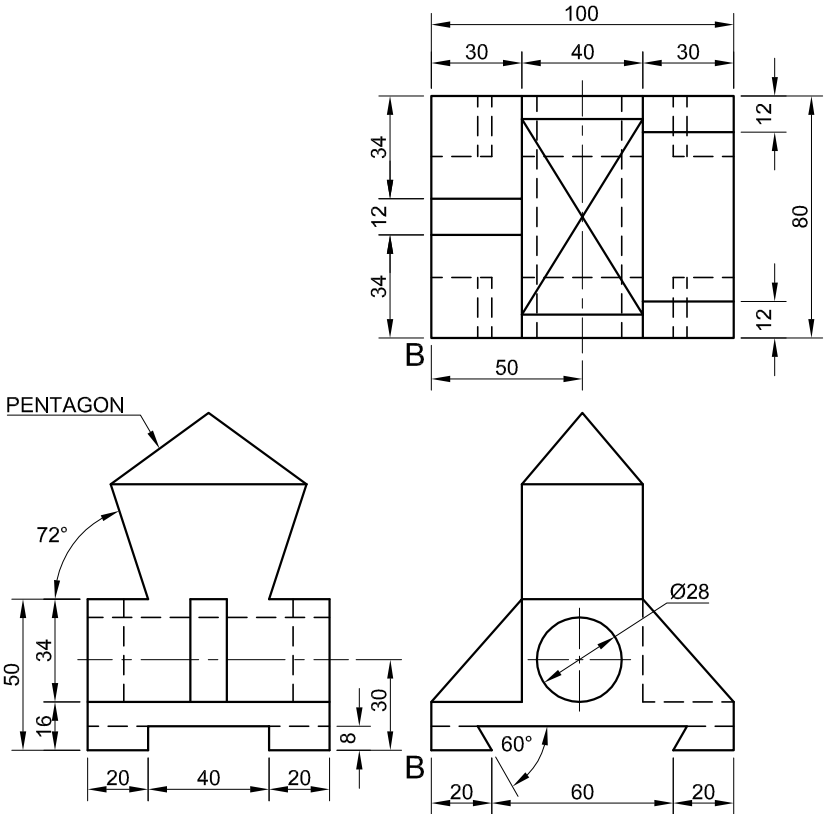
Given:

- The front view, top view and left view of a model.
- The position of point B on the drawing sheet.

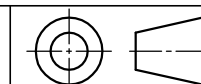
Instructions:

Convert the orthographic views of the model into a scale 1 : 1 isometric drawing.

- Make corner B the lowest point of the drawing.
- Show ALL necessary circle and other construction.
- NO hidden detail is required. **[38]**



ASSESSMENT CRITERIA				
1. AUX. VIEW + PLACING	5			
2. BASE + ISO' LINES	16			
3. WEB	1½			
4. PENTAGON	8½			
5. ISOMETRIC CIRCLES	6			
6. CENTRE LINES	1			
TOTAL	38			
NAME				
NAME				4





ASSESSMENT CRITERIA				
SECTIONAL FRONT VIEW				
1. HOUSING	24			
2. SCREW	6½			
3. RUBBER SEAL	3			
4. SUPPORT	3			
5. SHAFT	11			
6. RUBBER SEAL	3			
7. CAP	4			
8. WHEEL	4			
9. WASHER	1½			
10. NUT	6			
▲ CENTERLINES	5			
HATCHING	18			
ASSEMBLY	9			
TOTAL	98			

NAME	
NAME	6