HILLCREST HIGH SCHOOL
NOVEMBER EXAMINATION
ENGINEERING, GRAPHICS & DESIGN

GRADE 10
2016
PAPER 2

MARKS: 100 **TIME**: 2 HOURS

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of **5 pages** including the cover page and **4 questions**.
2. **All** questions must be answered.
3. Unless specified otherwise, all questions are in **Third Angle Orthographic Projection**.
4. Unless specified otherwise, all questions are to be completed to a **scale of 1:1**.
5. **All** answer sheets must be re-stapled in numerical order, even questions that are not attempted/blank.
6. All **construction work** must be shown, even if a stencil was used.
7. Print your **NAME** neatly on each page.
8. Use only the **drawing sheets** provided.
9. Your drawings should reflect **neatness** and **accuracy**.
10. All dimensions or detail not given may be **assumed in good proportion**.

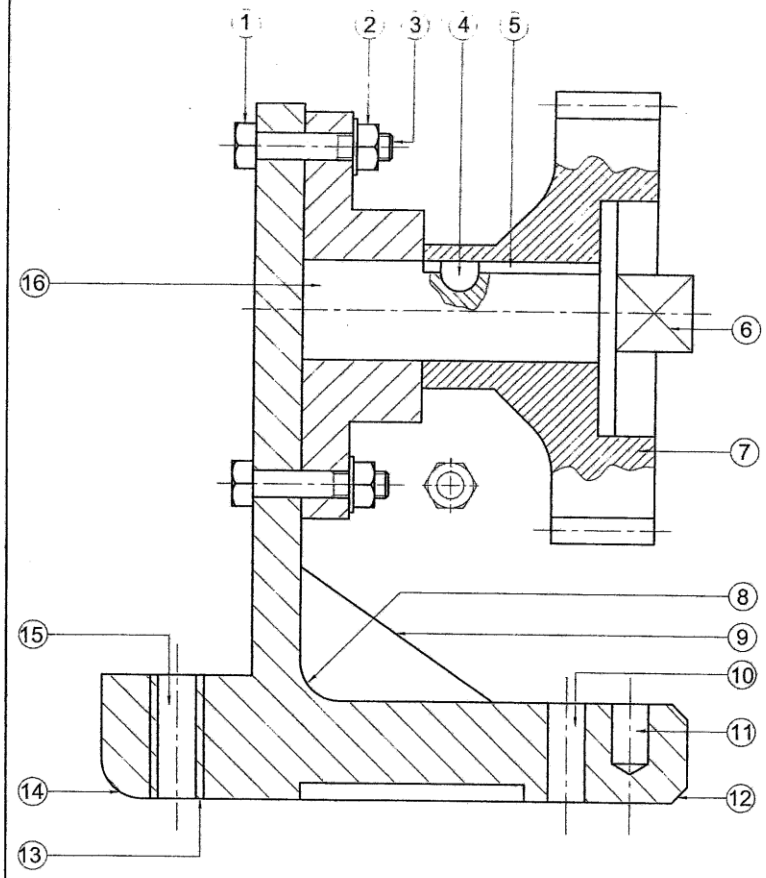
QUESTION	SECTION	MARK	MODERATE	MAXIMUM
1	MECHANICAL ANALYTICAL			17
2	TANGENTS			23
3	ISOMETRIC PROJECTION			28
4	MECHANICAL CASTING			32
TOTAL				100
SYMBOL				100

NAME

NOVEMBER 2016
GRADE 10 P2

QUESTION 1
17 MARKS

MECHANICAL
ANALYTICAL



STUDY THE DRAWING AND ANSWER THE QUESTIONS BELOW:	
1.1.1. What is the component at 1 called?	
1.1.2. What is the component at 2 called?	
1.1.3. What type of thread is shown at 3?	
1.1.4. What is the component at 4 called?	
1.1.5. What is the feature at 5 called?	
1.1.6. What is the feature at 6 called?	
1.1.7. What type of sectioning is shown at 7?	
1.1.8. What is the feature at 8 called?	
1.1.9. What is the feature at 9 called?	
1.1.10. What type of hole is shown at 10?	
1.1.11. What type of hole is shown at 11?	
1.1.12. What is the feature at 12 called?	
1.1.13. What type of thread is shown at 13?	
1.1.14. What is the feature at 14 called?	
1.1.15. What type of hole is shown at 15?	
1.1.16. What is the component at 16 called?	
1.1.17. Draw the symbol for third angle orthographic projection, freehand in the space provided.	

NAME

ANSWER SHEET 1

NOVEMBER 2016
GRADE 10 P2

QUESTION 2
23 MARKS

TANGENTS

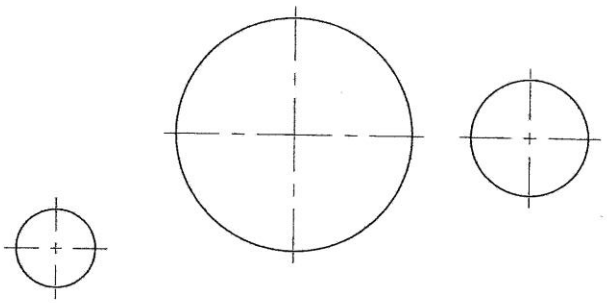
The figure below shows a TURN KEY. Draw the TURN KEY, using tangents and blending of arcs drawing techniques. Draw the hexagon in the correct position to a measurement of 40mm "across the flats".

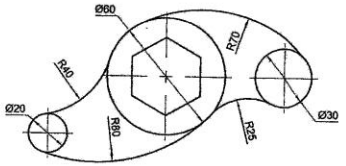
- Show all construction and calculation.
- Show all points of contact and arc centres.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following:

- draw the arc centres
- draw the points of contact
- draw the arcs
- show all calculation
- draw the hexagons





SHOW YOUR CALCULATION HERE

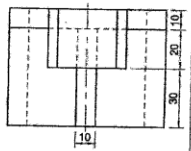
NAME

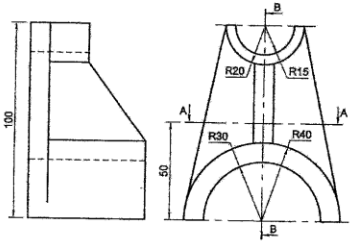
ANSWER SHEET 2

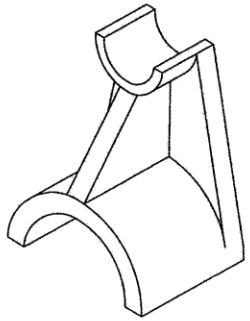
NOVEMBER 2016
GRADE 10 P2

QUESTION 4
32 MARKS

MECHANICAL CASTING







The figure shows the front view, top view and left view of a BRACKET drawn in third angle orthographic projection. The isometric projection is also shown.

Draw the following in the space provided:

4.1. the **given front view,** show all centre lines in this view;

4.2. the **sectional top view** on the cutting plane A-A, do not show any hidden detail in this view;

4.3. the **sectional right view** on the cutting plane B-B, do not show any hidden detail in this view.

4.4. Draw the cutting planes in the front view.

4.5. Space your views correctly and appropriately.

4.6. Label the sectioned views using 4mm guidelines below each view.

ASSESSMENT CRITERIA			
FRONT VIEW			
1	FRONT VIEW DETAILS	8	
2	CENTRE LINES	2	
3	CUTTING PLANES	4	
SECTIONED TOP VIEW			
4	AREAS OF SECTION	3	
5	AREAS OF NO SECTION	5	
SECTIONED RIGHT VIEW			
6	AREAS OF SECTION	3	
7	AREAS OF NO SECTION	3	
GENERAL			
8	LABELS	2	
9	POSITION VIEWS	2	
TOTAL		32	

NAME

ANSWER SHEET 4