

HILLCREST HIGH SCHOOL

MID-YEAR EXAMINATION

ENGINEERING, GRAPHICS & DESIGN

GRADE 10
2014

MARKS: 100 TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES

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

QUESTION	SECTION	MARK	MAXIMUM
1	GEOMETRIC CONSTRUCTIONS		20
2	TANGENCY		30
3	MECHANICAL CASTING		50
TOTAL			200
SYMBOL			100

NAME: _____

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QUESTION 1

GEOMETRIC CONSTRUCTIONS

The following details refer to the adjacent sub-questions:

SPECIFICATIONS:

- Use instruments only.

REQUIREMENTS:

1. Use your knowledge on constructions and answer the questions in the space provided.

- Show all construction.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following

- divide a line into 5 parts (3)
- draw a pentagon with 20mm sides (5)
- draw an inscribed circle to a triangle (6)
- draw a circumscribed circle to a triangle (6)

20 MARKS

NAME: _____

QUESTION 1.1

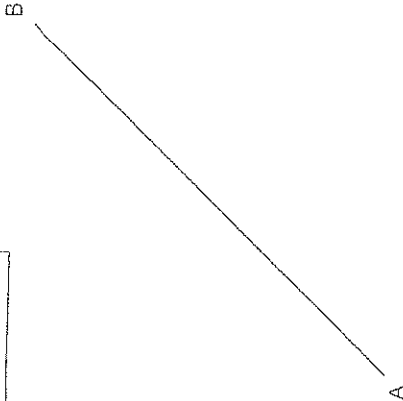
Draw a pentagon with base sides of 20mm. (5)

QUESTION 1.2

Draw a circumscribed circle to the given triangle MNO. (6)

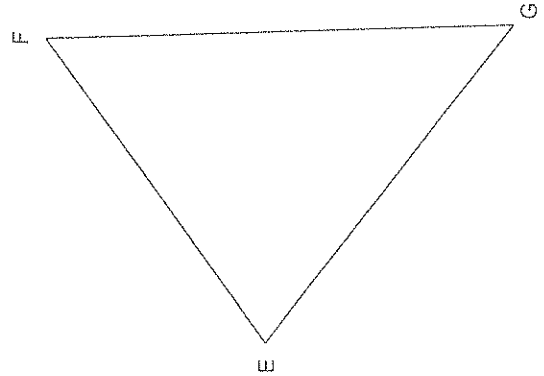
QUESTION 1.1

Divide the given line AB into 5 equal parts. (3)



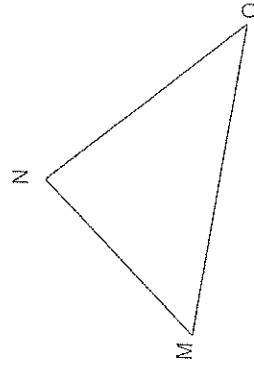
QUESTION 1.3

Draw an inscribed circle to the given triangle EFG. (6)



QUESTION 1.4

Draw a circumscribed circle to the given triangle MNO. (6)



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QUESTION 2
TANGENCY

The following details refer to a BOLT HANDLE:

SPECIFICATIONS:

the diagram of the bolt handle is given below with the dimensions.

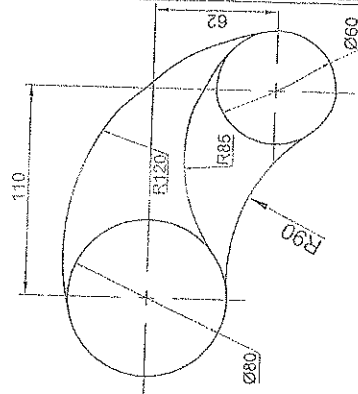
REQUIREMENTS:

- 2.1. Draw the BOLT HANDLE using instruments and tangent techniques.
- 2.2. Show all construction and calculation.
- 2.3. Draw all centre lines.
- 2.4. Draw all arc centres and points of contact.

ASSESSMENT CRITERIA

You will be assessed on your ability to do the following

- draw the arc centres (6)
- draw the points of contact (6)
- draw the arcs (3)
- show all construction (6)
- show all calculation (3)
- draw all centre lines (4)
- draw the given circles (2)



30 MARKS

NAME: _____

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QUESTION 3

MECHANICAL CASTING

The following details refer to a CASTING:

SPECIFICATIONS:

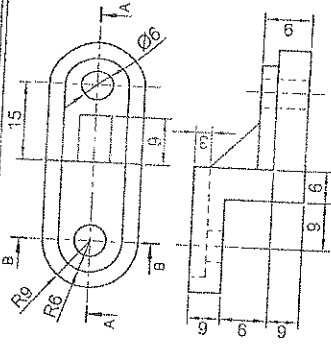
- Given front view and top view drawn in third angle orthographic projection.
- The pictorial view is also given.

REQUIREMENTS:

- 3.1. Draw the sectional front view, on the cutting plane A-A. *No hidden is required in this view.*
- 3.2. Draw the given top view. *Show no hidden detail.*
- 3.3. Draw the sectional left view, on the cutting plane B-B. *Show all hidden detail in this view.*
- 3.4. Draw all centre lines and cutting planes
- 3.5. X-Hatch all sectioned areas.

ASSESSMENT CRITERIA

- | | |
|---|----|
| TOP VIEW | |
| • draw the outside top view | 13 |
| • draw the cutting planes and centre lines | 5 |
| SECTIONAL FRONT VIEW | |
| • draw and X-Hatch the sectional front view | 13 |
| • label the view and draw the centre lines | 3 |
| SECTIONAL LEFT VIEW | |
| • draw and X-Hatch the sectional right view | 8 |
| • label the view and draw the centre line | 2 |
| • draw the hidden detail | 6 |



50 MARKS

NAME: