

Name: \_\_\_\_\_ Index Number: \_\_\_\_\_

Stream: \_\_\_\_\_ SCHOOL: \_\_\_\_\_

Candidate's Signature: \_\_\_\_\_

449/1

Drawing & Design

PAPER 1

OCTOBER 2022

TIME: 2½ HOURS



## NYAHOKAKIRA CLUSTER 3 EXAMINATIONS

Kenya Certificate of Secondary Education

OCTOBER 2022

### INSTRUCTIONS TO CANDIDATES

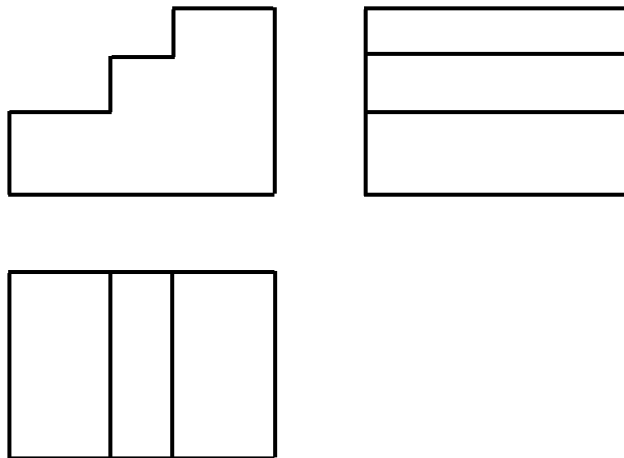
- (a) You should have the following materials for this examination.
  - i. Drawing instruments
  - ii. Answer sheet
  - iii. 3 sheets of drawing paper size A<sub>3</sub>
- (b) This paper consists of three sections, **A**, **B** and **C**.
- (c) Answer all questions in section **A** and **B** and **any two** questions from section **C**.
- (d) Questions in section **A** must be answered in the **answer sheet** provided.
- (e) Questions in section **B** and **C** should be answered on the A<sub>3</sub> sheets of drawing paper provided.
- (f) All dimensions are millimetres unless otherwise stated.
- (g) Candidates may be penalised for not following the instructions given in this paper.
- (h) This paper consists of **6** printed pages.
- (i) Candidates should check the question paper to ascertain that all pages are printed as indicated and that no question is missing.
- (j) Candidates should answer the questions in English

**SECTION A (50 marks)**

*Answer ALL the questions in this section.*

1. (a) Briefly explain what the following terms means in design process. (4marks)
  - i. Function
  - ii. Aesthetics
  - iii. Ergonomics
  - iv. Design Brief

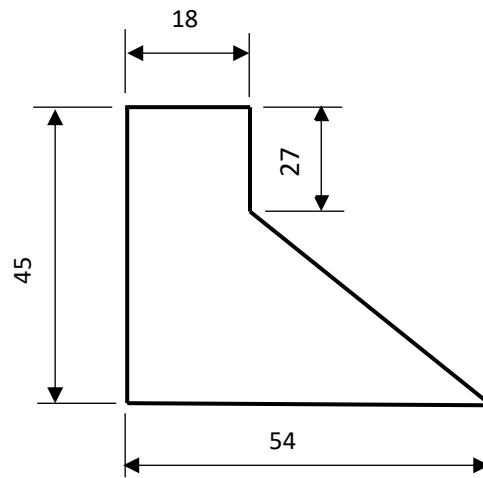
(b) State six way of communicating design ideas. (3 marks)
2. State one use of the following computer components. (4 marks)
  - i. Keyboard
  - ii. Hard drive
  - iii. Mouse
  - iv. CPU
3. (a) Name the two universal methods of presenting technical drawing (2 marks)  
 (b) List three roles of a draughtsman in the engineering field. (3 marks)
4. **Figure 1** shows orthographic views of a metal block. In good proportion draw a two-point perspective of the block, assume the block is below the horizon line. (5 marks)



**Figure 1**

5. Construct a regular pentagon given the length of sides is 25mm. (5 marks)
6. Construct a triangle of perimeter 185mm whose sides are in a ratio of 3:5:6 and convert to a square of the area. (5 marks)

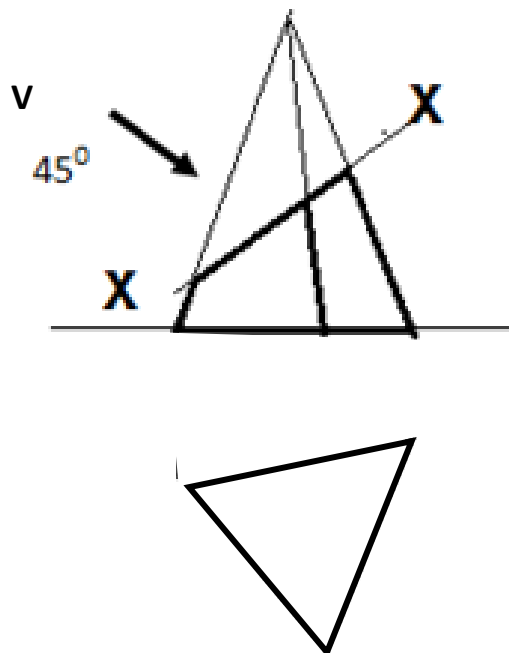
7. **Figure 2** shows a sheet metal template construct a scale of 10:9. Use the scale to construct the template. (6 marks)



**Figure 2**

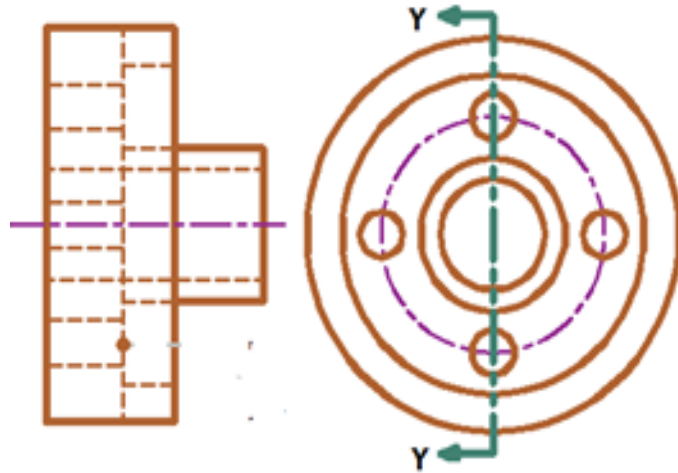
8. **Figure 3** shows a triangular based pyramid truncated by the cutting plane X-X, in good proportion; (6 marks)

- i. sketch the auxiliary view of the pyramid as viewed from point V.
- ii. Complete plan.



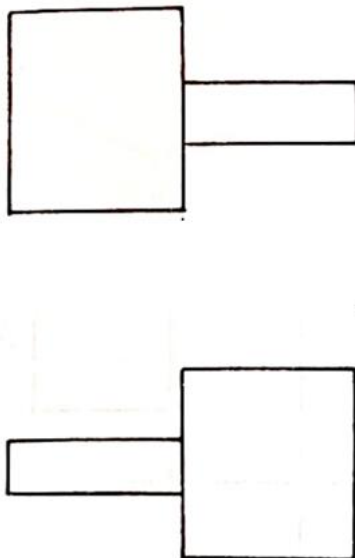
**Figure 3**

9. **Figure 4** shows the orthographic views of a machine component. Sketch the sectional elevation of the component along **Y-Y**. (5 marks)



**Figure 4**

10. **Figure 5** shows orthographic views of a metal block, copy the views and sketch the missing view. (5 marks)



**Figure 5**

**SECTION B (20 MARKS)**

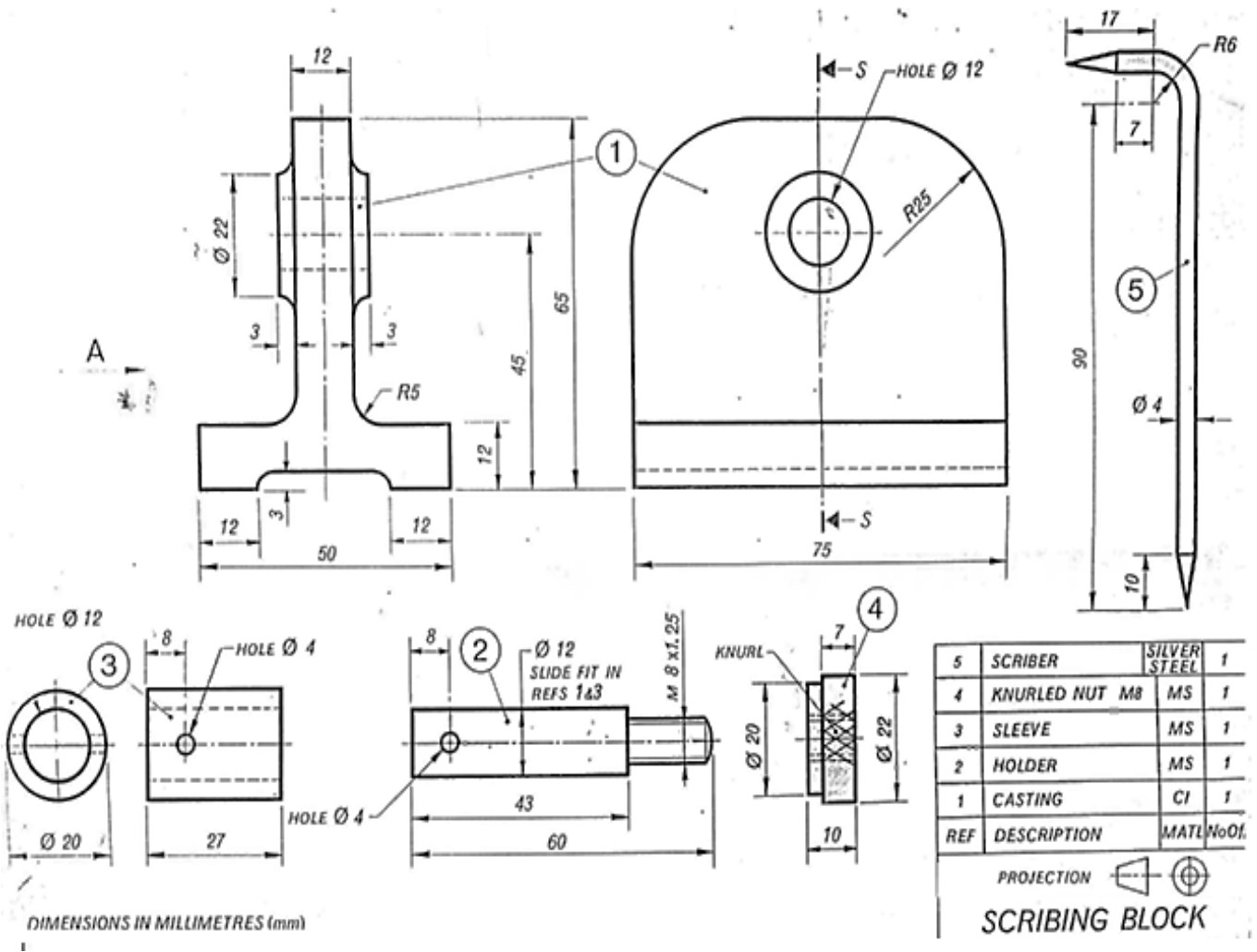
*This question is compulsory.*

*Students are advice not to spend more than one answering this question.*

**11. Figure 6** shows detailed drawings of a scribing block drawn in 3<sup>rd</sup> angle projection.

Assemble the parts and draw;

- Sectional elevation along the cutting plane S-S
- The plan.
- Insert six leading dimensions.

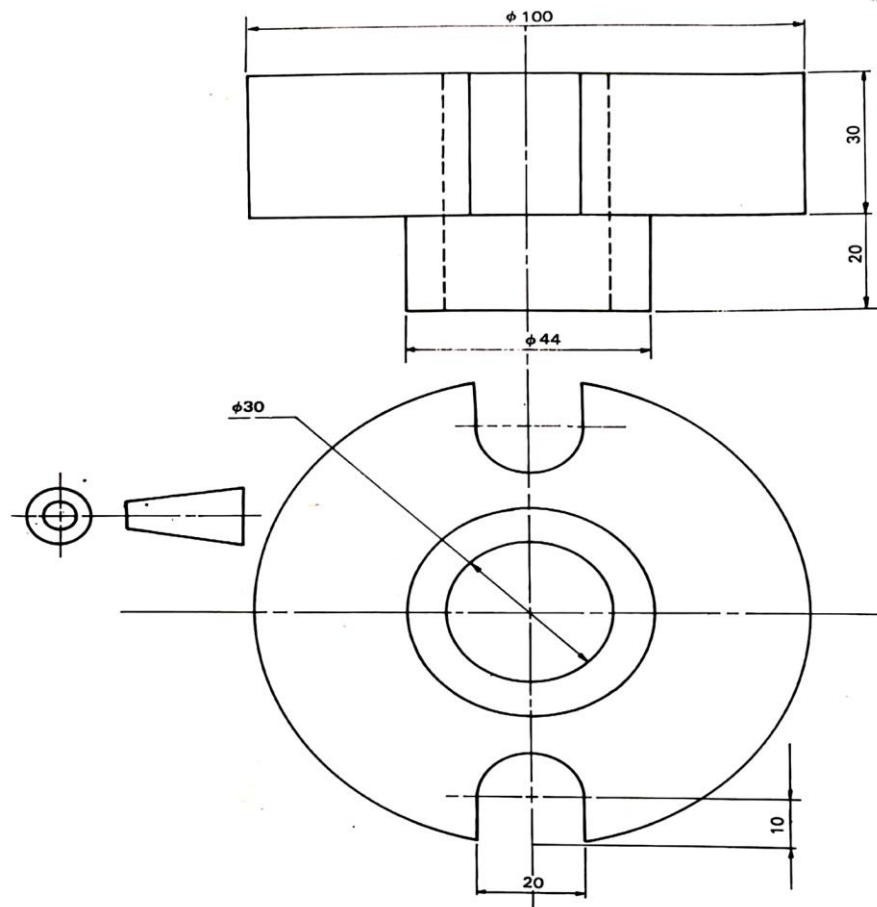


**Figure 6**

**Section C (30 marks)**

*Answer any two questions from this section.*

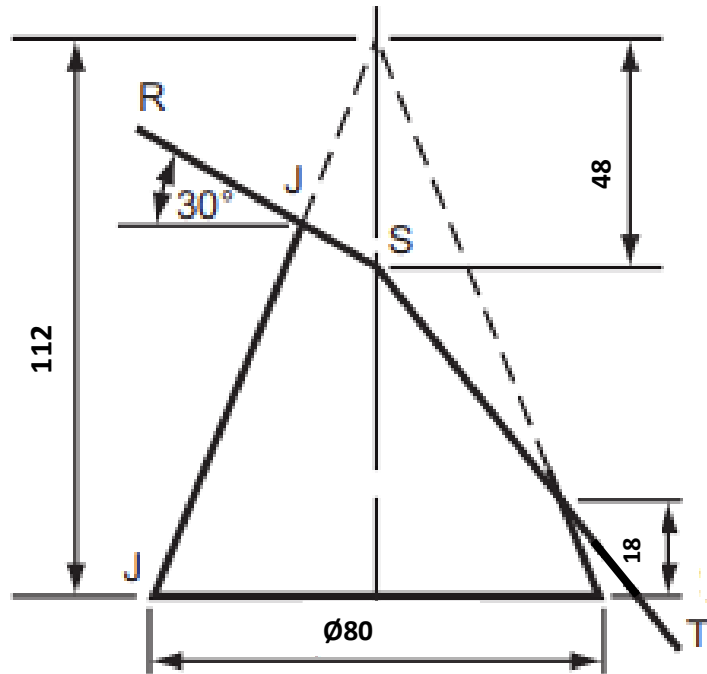
- 12.** Figure 7 shows two views of a block. Draw the block FULL SIZE the figure in oblique projection. (15 marks)



**Figure 7**

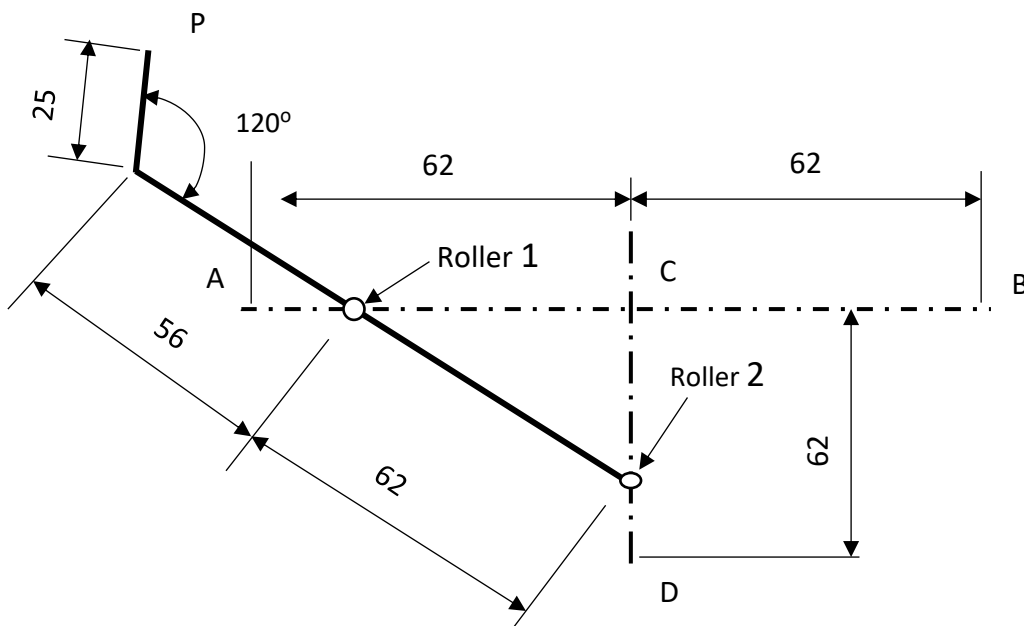
**13. Figure 8** below shows a cone truncated by the cutting planes **RST**. Copy the given view and draw.

- Complete plan.
- Surface development



**Figure 8**

**14. In Figure 9**, rollers 1 and 2 are attached to the angled rod. Roller 1 slides along slot AB while roller 2 slides along CD and back. Draw, full size, the locus of P, the end of the rod, for the complete movement of roller 1 from A to B. (15 Marks)



**Figure 9**