Name:……AdmNo:…….....Stream:……

Candidate's Signature:……..Date:……

449/1
Drawing & Design
PAPER 1
***July* -**2021
Time: 2 ½ Hours

SAMIA SUB-COUNTY EXAMS

Kenya Certificate of Secondary Education
DRAWING & DESIGN

INSTRUCTIONS TO CANDIDATE:

1. Write your ***name***, **AdmNo,** and ***Stream*** in the spaces provided.
2. You should have the following for this examination;
- Drawing instruments
- **3** sheets drawing papers size **A3**.
- Scale rule

3.This paper consists of sections **A, B** and **C**.
4.Answer all questions in section A and B and any two questions from section C.
5.All questions should be answered on the A3 drawing paper provide.
6.All dimensions are in millimeters.
7. The candidate is advised to spend this time understanding the design problem and planning the work on one of the drawing papers provided.
8.Candidates may be penalized for not following the instructions given in this paper.

FOR EXAMINERS' USE ONLY.

QUESTION	MAXIMUM SCORE	CANDIDATE'S SCORE
1-14		

1. a) Explain briefly giving examples the following types of plastics.

i. Thermosetting. (1mk)

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ii. Thermoplastic. (1mk)

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b) With the aid of a sketch show **two** ways of dimensioning a blind hole. (3mks)

2. a) Construct an ellipse of minor and major axes as 58mm and 92mm respectively using the concentric circle method. (5mks)

b) Give **two** reasons why drawing is so much effective as a mean of communication. (2mks)

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3. a) State **one** reason for using symbols and abbreviations. (1mk)

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b) Name **two** items used in temporary joining of materials in engineering. (2mks)

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4. a) State **one** reason why engineer can be called a creator. (1mk)

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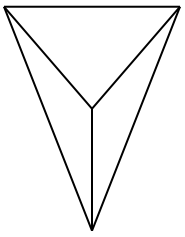
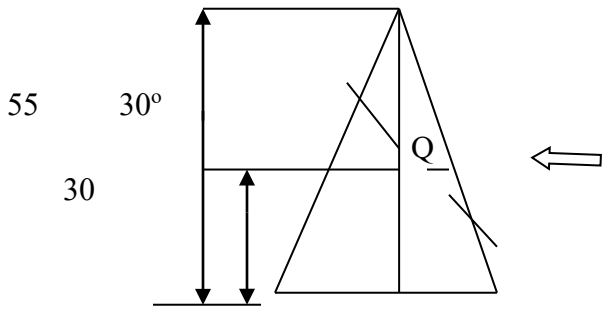
b) The figure below shows the front elevation and incomplete plan of the truncated triangular pyramid drawn in 3rd angle orthographic projection. Complete the plan and draw an end elevation in the direction of arrow Q. (5mks)





5. a) State the importance of the following stages in the design process.

i. Model. (1mk)

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ii. Evaluation. (1mk)

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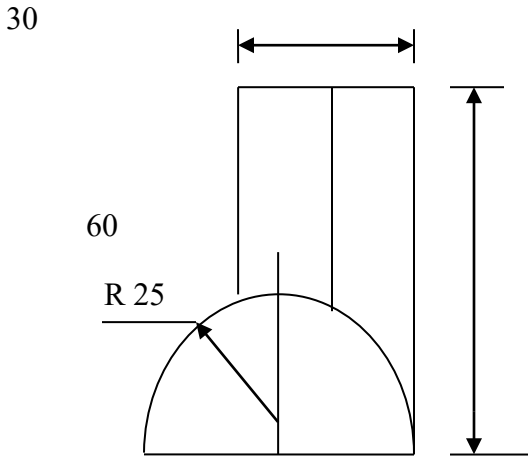
b) The figure below shows two off set intersecting cylindrical pipes. Copy the given views and construct a complete development of the smallest pipe. (6mks)



6. a) Draw an Archimedean spiral on the line QR shown below. (3mks)

Q ——————————————————R

b) Show in sketches a crate boxing of an object having height, base radius and has slanting length say height = 85mm, base radius = 35mm. (3mks)

7. a) Define the term plywood. (1mk)

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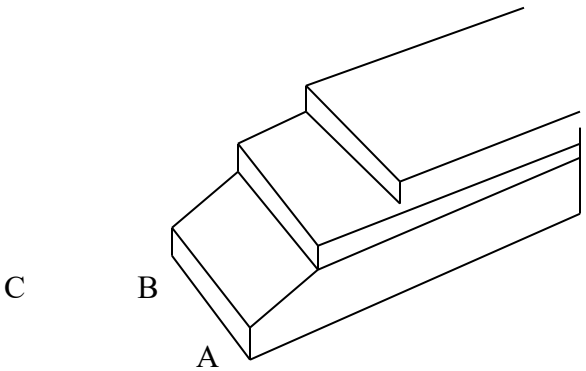
b) (i) Name the parts of the plywood marked A,B and C shown in the figure below. (3mks)



ii. Name one type of wood glue. (1mk)

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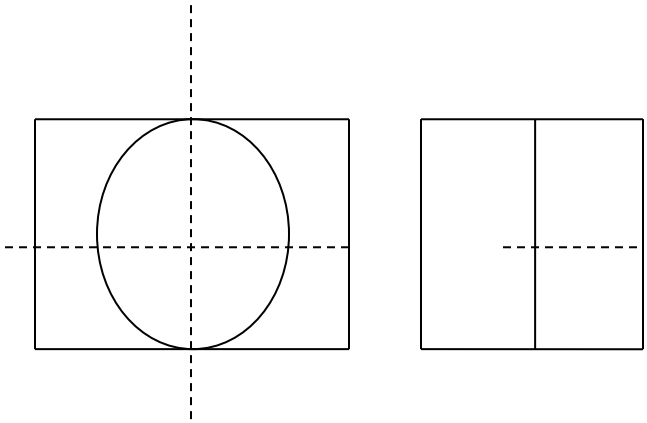
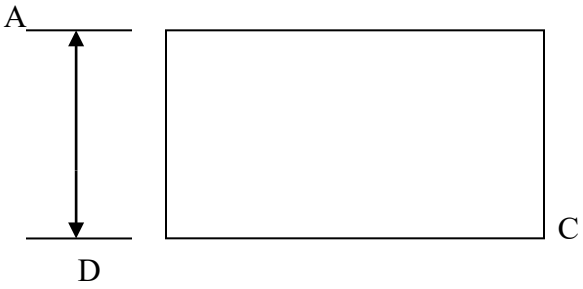
8. The figure below shows two views of a block. Sketch the block in oblique projection. (5mks)



9. Name four different types of scales used in engineering drawing. (2mks)

10. Draw a square of the same area with rectangle ABCD shown in the figure below.
Distance BD = 60. (3mks)



SECTION B (20 MARKS)

This question is **COMPULSORY**

11. Figure 8 shows parts of a connecting bracket drawn in the first angle projection. Assemble the parts and draw **TWICE FULL SIZE** the following views in the third angle projection.
    a) A front elevation
    b) A sectional plan on the cutting plane x-x
       Insert six leading dimensions
       Unspecified dimensions are left to the candidate's discretion.

SECTION C (30 MARKS)

This section answer any two questions

12. The figure below shows an elevation seen from direction S. Name the shape formed by the cutting plane on the end elevation. (15mks)
13. Figure 6 shows a crank mechanism in which point U reciprocates long XY as p rotates about YT is fixed at right at right angle to PU at T, plot the locus of point V for complete revolution of OP. (15mks)
14. Figure 9 shows a block drawn in isometric projection. Draw FULL SIZE in first angle projection the three orthographic views of the block. (15mks)

14. Figure 9 shows a block drawn in isometric projection. Draw FULL SIZE in first angle projection the three orthographic views of the block (15 marks)

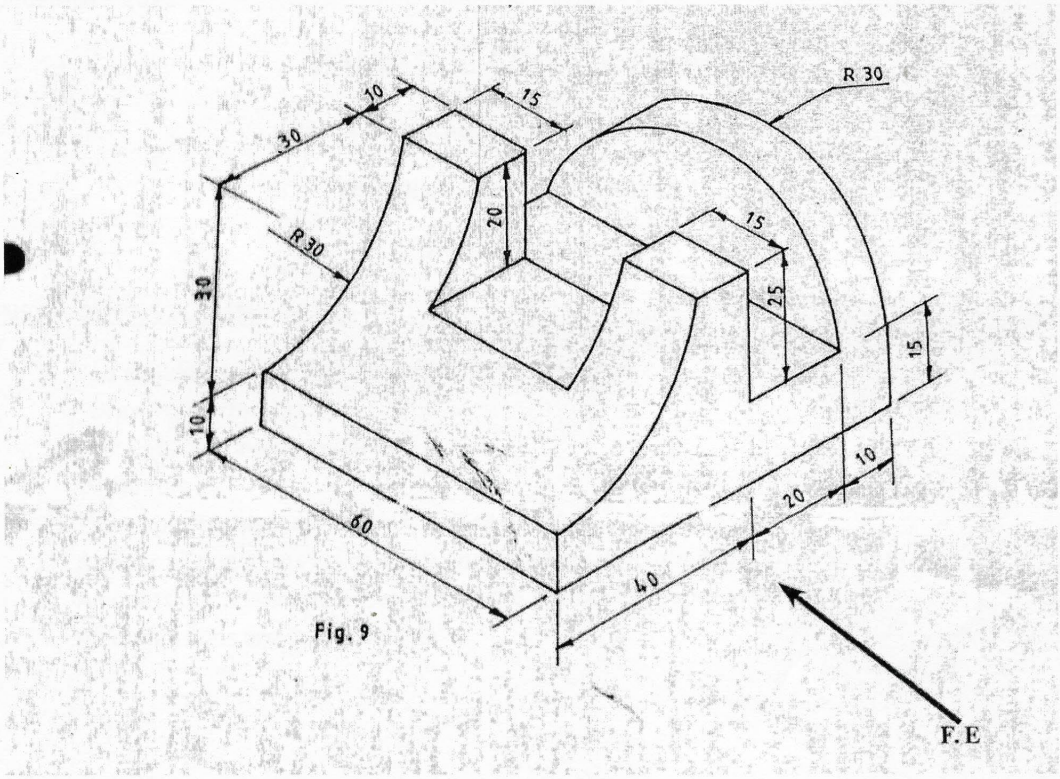


Fig. 9