

**THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL
CERTIFICATE OF SECONDARY EDUCATION EXAMINATION**

097

**MECHANICAL DRAUGHTING
(For Both School and Private Candidates)**

Time: 3 Hours

Wednesday, 6th November 2013 p.m.

Instructions

1. This paper consists of **six (6)** questions.
2. Answer question **number 1** and any other **three (3)** questions.
3. Question number 1 carries 40 marks while the others carry 20 marks each.
4. Calculators and Cellular phones are **not** allowed in the examination room.
6. Write your **Examination Number** on every page of your answer booklet(s).

1. Figure 1 shows the drawing of two views of a machine bracket. Draw the following views to a scale of full size:
- A sectional front elevation with regard to the cutting plane indicated by arrow X-X. (11.5 marks)
 - A sectional plan with the projection indicated by cutting plane Y-Y. (12 marks)
 - An end elevation as viewed from the front elevation. (9 marks)
- Use Standard paper format and Title block (7.5 marks)

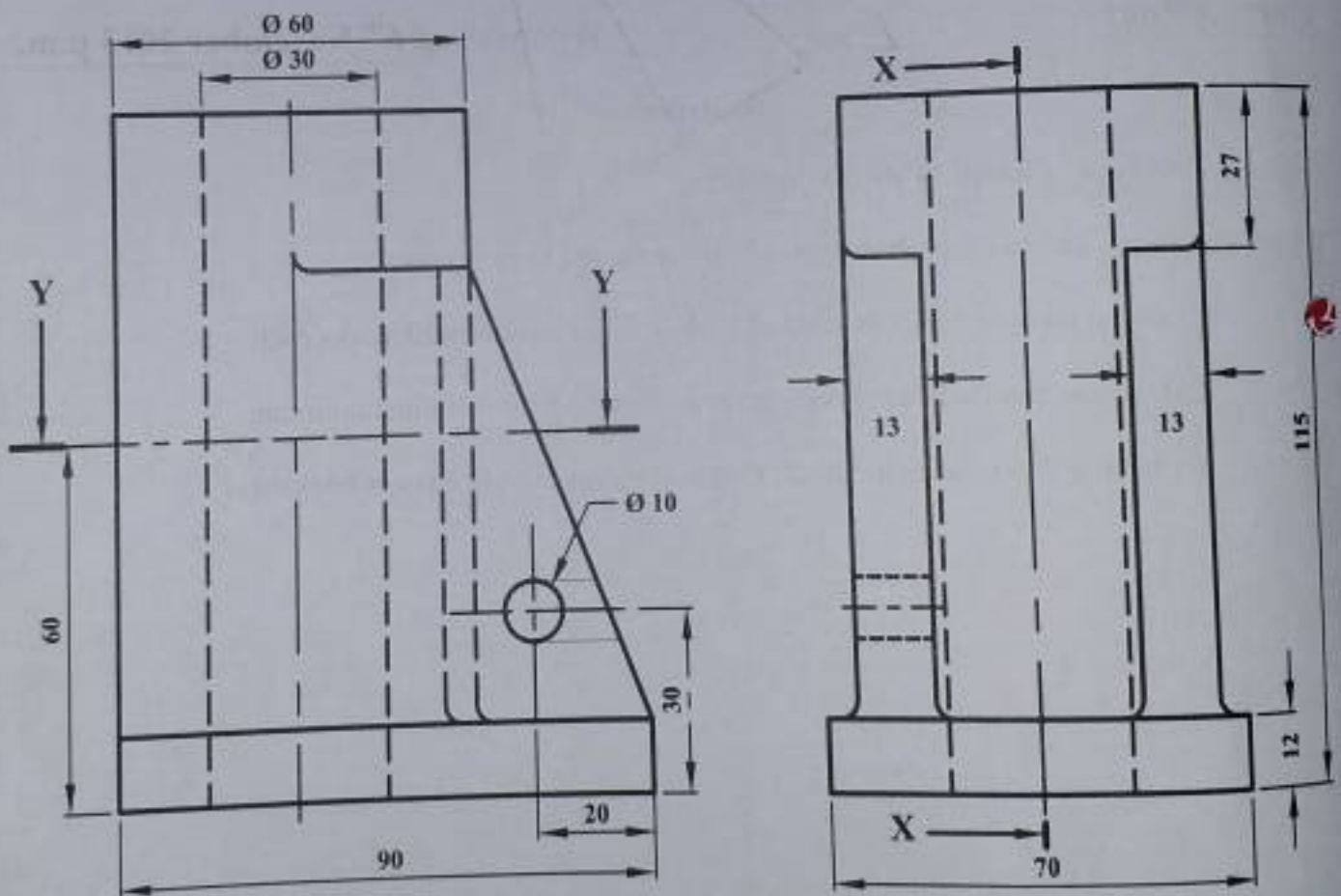


Figure 1

2. (a) A square pyramid which is tilted at 30° to horizontal is shown in Figure 2. Draw the following in first angle projection: **(15.5 marks)**

- (i) the given view,
(ii) the plan and left hand end elevation.

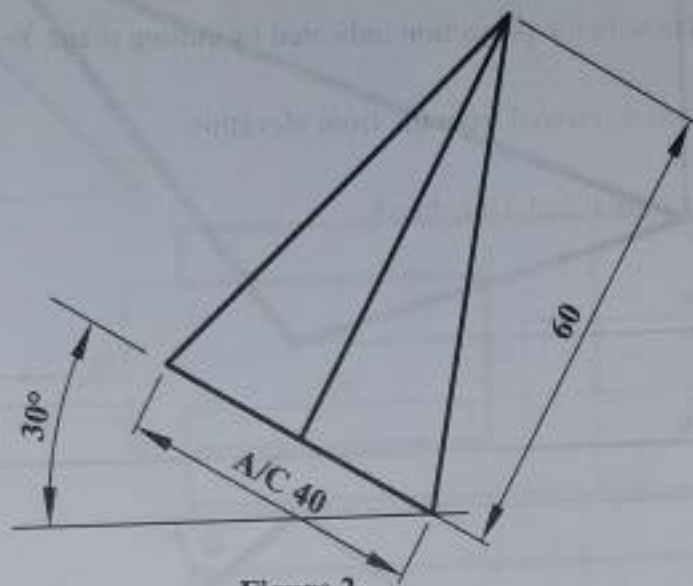


Figure 2

- (b) (i) Name three types of pencil grades. **(1.5 marks)**
(ii) What are the uses of the Compass and Trammel drawing instruments? **(2 marks)**
(iii) Mention two drawing instruments used for drawing horizontal lines on drawing board. **(1 mark)**

3. Figure 3 shows a point P which moves along a link PO which rotates clockwise about O. As the link rotates half way, the point P reaches O, and as the shaft rotates the second half of circle the point P moves back to its original position. Draw the locus of point P as shaft PO rotates one revolution. **(20 marks)**



Figure 3

4. Two views of lamina given in first angle projection are shown in Figure 4. Draw the true shape of lamina using front elevation. **(20 marks)**

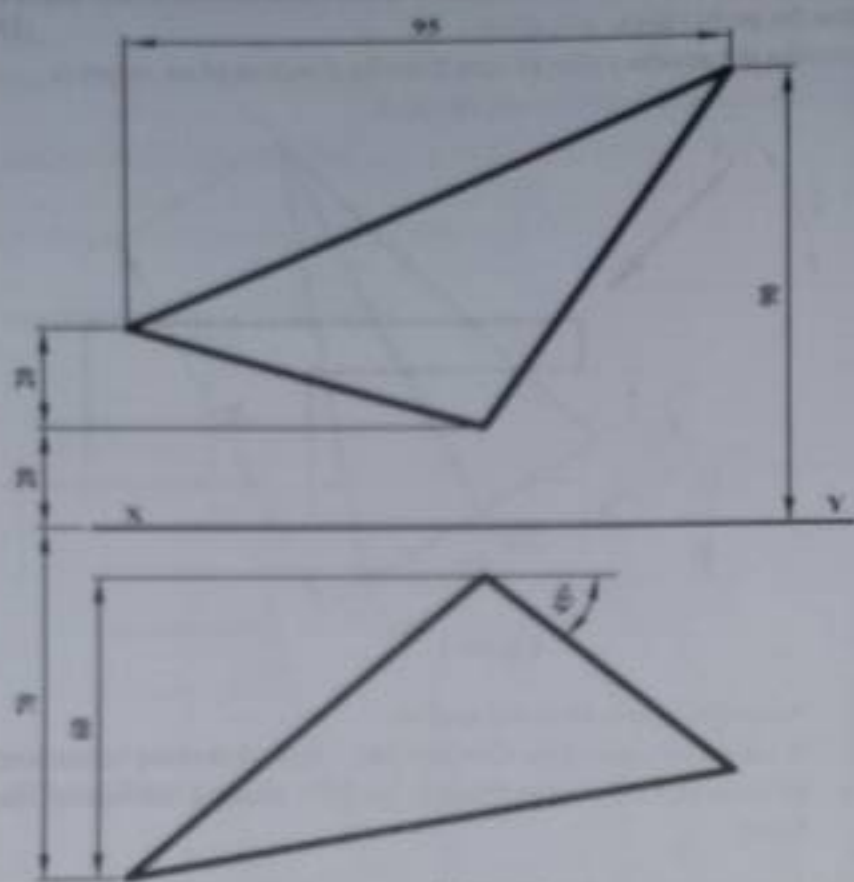


Figure 4

5. Figure 5 shows the front elevation and plan of a drive belt bracket in first angle projection.
- Draw the given views. (6 marks)
 - Construct the auxiliary plan as seen from the direction of an arrow A. (14 marks)

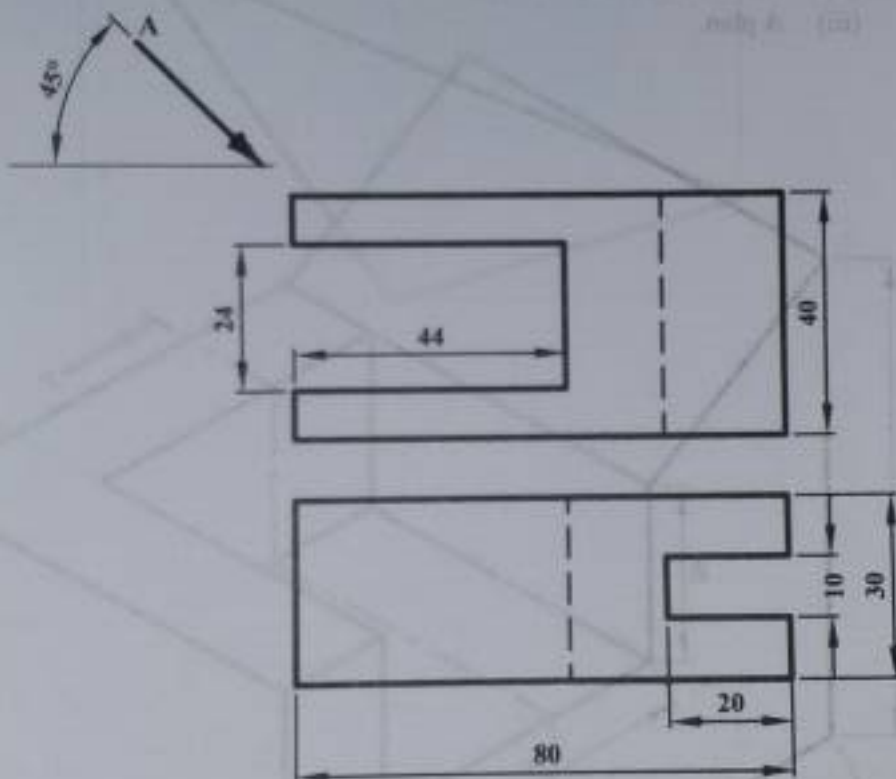


Figure 5

6. (a) Figure 6 shows a pictorial drawing of a block. Draw the following views in first angle projection. (13 marks)

- Front elevation indicating cutting plan Y-Y.
- A sectioned end elevation.
- A plan.

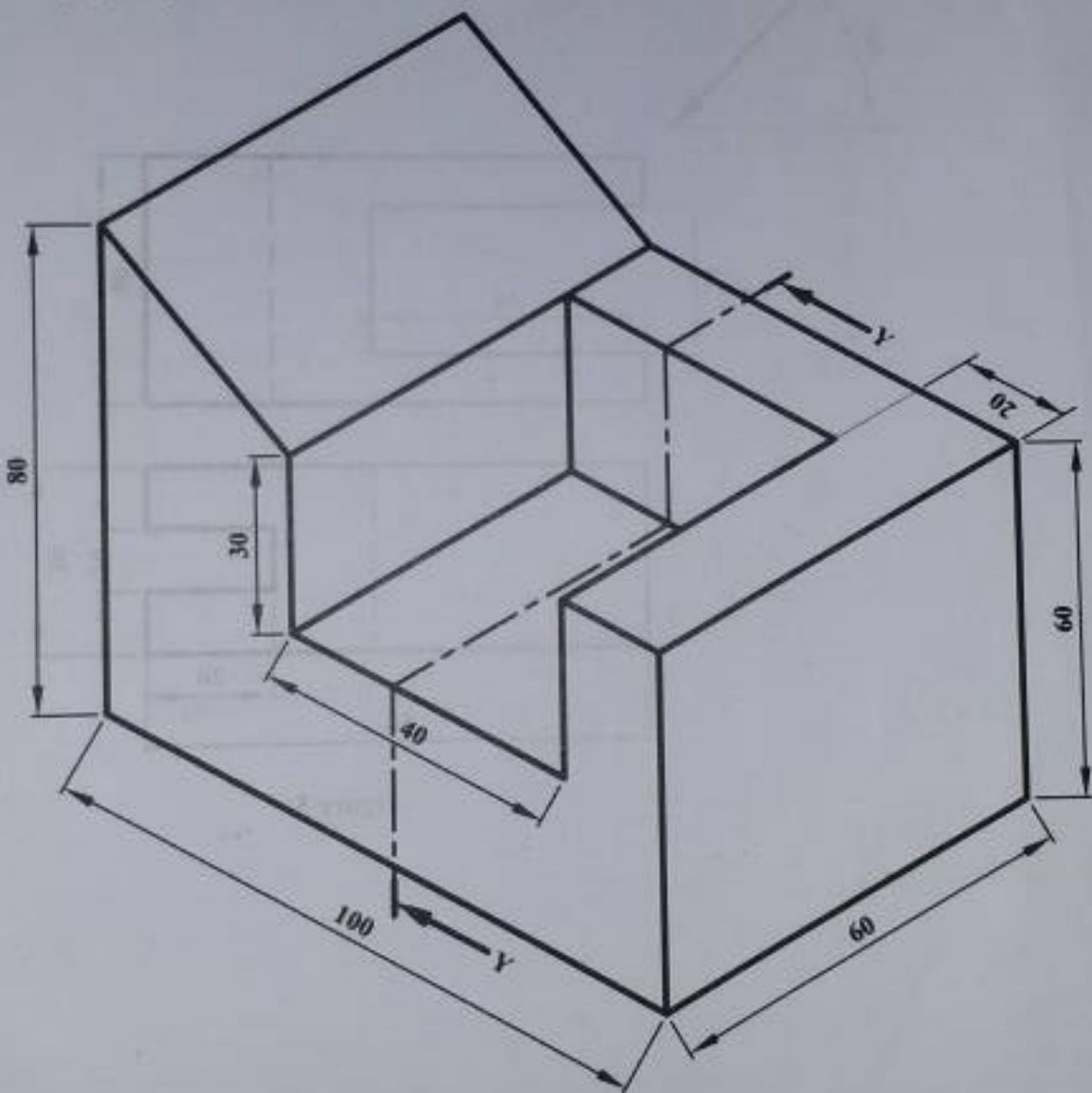


Figure 6

- What are the two common uses of thread in mechanical engineering? (1 mark)
- Give the size of the following drawing sheets. (2 marks)
 - A_0
 - A_1
 - A_2
 - A_3
- Define the following terms as used in limit and fits. (4 marks)