735/1
Geometrical Drawing
Paper 1
July/August, 2015
3 Hours

UGANDA MUSLIM TEACHERS'ASSOCIATION

UMTA JOINT MOCK EXAMINATIONS - 2015

UGANDA CERTIFICATE OF EDUCATION

Geometrical and Building Drawing

Paper 1

3 Hours

INSTRUCTIONS TO CANDIDATES:

- *This paper consists of* two *sections,* **A** *and* **B.**
- *Answer* **four** *questions, choosing* **two** *questions from each section.*
- **All** *questions carry equal marks.*
- *A sheet of paper size* **A2** *is provided. You may use both sides of the drawing paper for your answers.*
- *Drawings are* **not** *to scale.*
- *Unless otherwise stated in the questions, strictly geometrical methods must be used; but lines which are parallel, perpendicular, or inclined at angles of 30°, 45°, 60°, to other lines may be drawn without showing constructional lines.*
- *All dimensions of the figures are in millimetres.*
  Unless otherwise stated, solutions are to be drawn full size.
- *No dimensions are required on any solution unless specifically requested.*

SECTION A -Plane Geometry

1. (a) Construct a diagonal scale of 3 cm to 1m to read up to 5m

   (b) Show the following readings on the scale

   (i) 3m 75cm

   (ii) 2m 84cm

   (iii) 1m 17cm

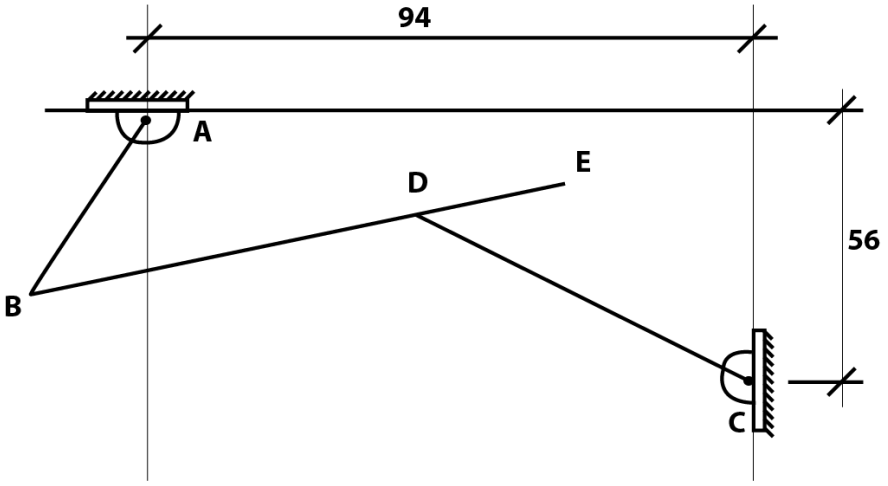
   (c) Use the scale in (a) above to construct a triangle ABC, given AB 3.7m, BC 1.17m, AC 2.91M.

   (d) Transform the triangle in (c) above into a square of equal area

   (e) Transform the square in (c) above into another square twice the area. Measure and state the length of side of the square, using the scale in (a) above.

2. (a) Plot the locus of a point P, which moves in a clockwise direction at constant speed from the centre for a radial distance of 60mm in one revolution. Name the locus

   (b) The figure shows a link mechanism, in which AB and CD oscillate about A and C respectively. The cranks are connected by the Link BE; which is pin jointed at B and D draw the locus of E.



3. A heptagonal plot of land is to have the following information about it

   Sides AB = 60, BC = 70, CD = 80, DE = 95, EF = 120, FG =85.

   Angles B= 105^0, C = $277\frac{1}{2}^0$, D = 60^0, E = 105^0, F = $78\frac{3}{4}^0$

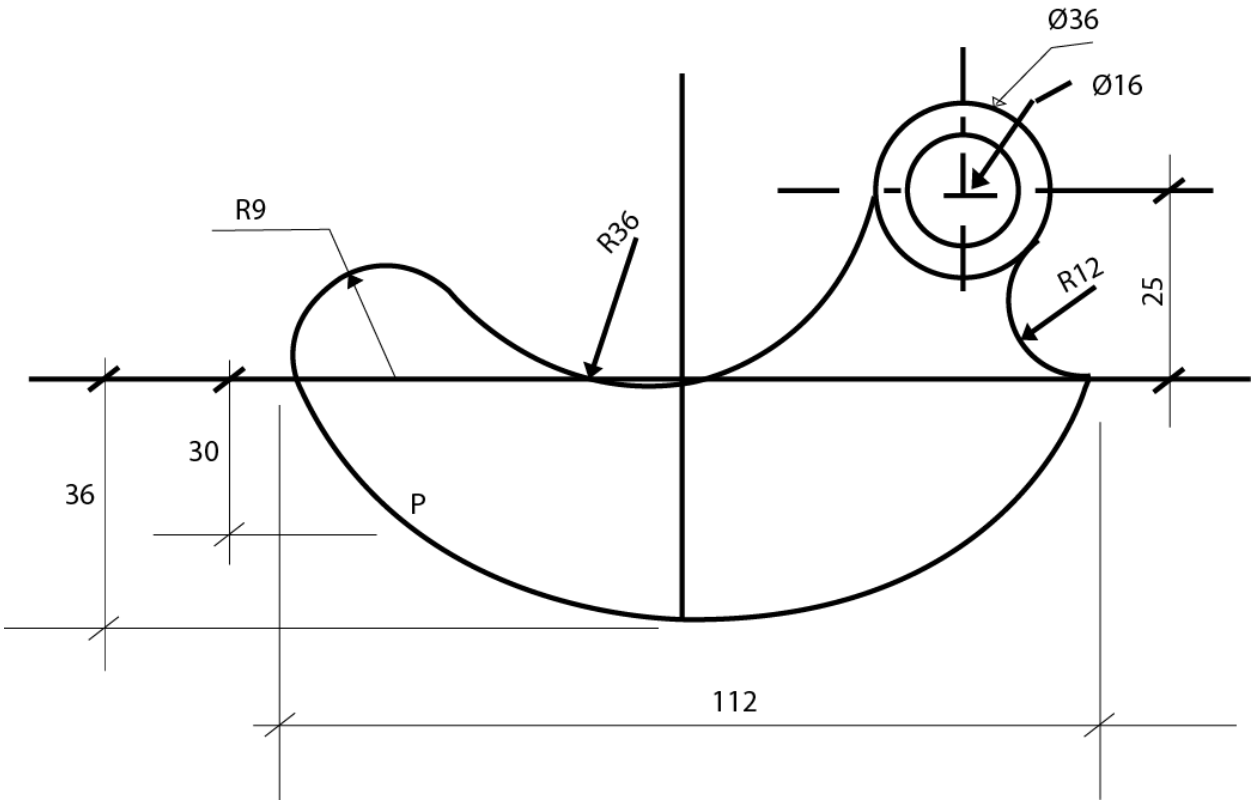
   (a) Construct the outline of the plot full size, without using a protractor.

(b) Measure and state

(i) Distance AG

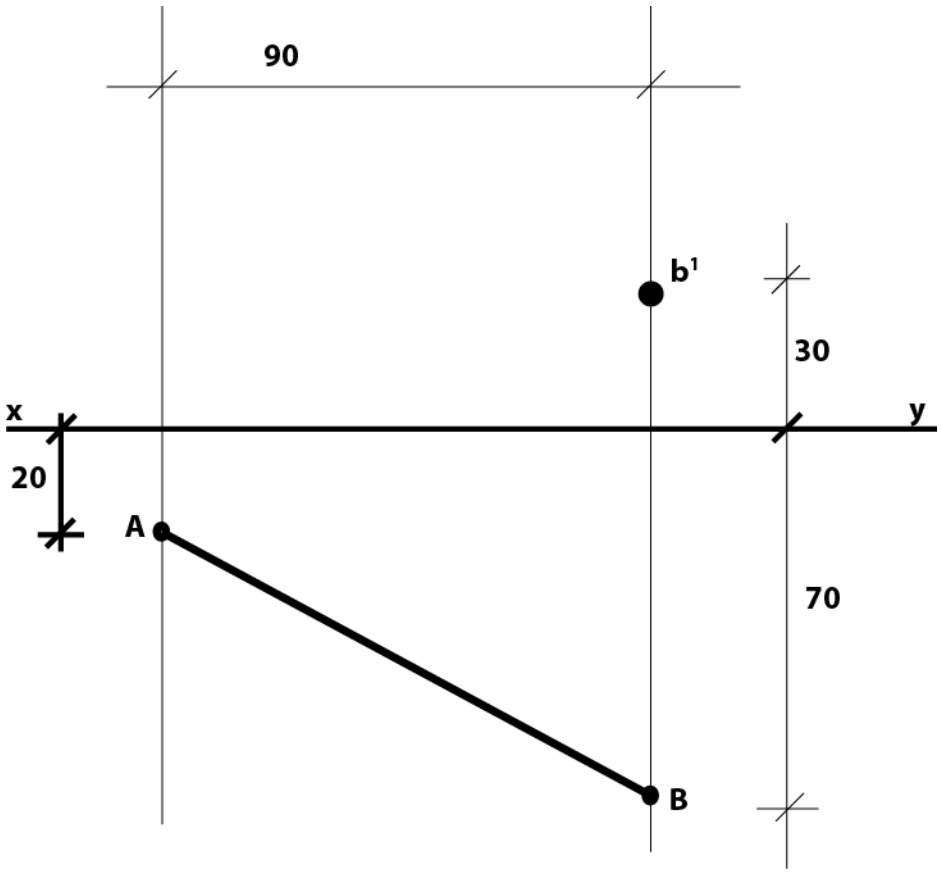
(ii) Angle GAB

4. The plate cam profile for a locking device is shown in the figure. The position of the profile below the line XY is a true semi- ellipse. Construct the given profile and a tangent at 'P' show clearly the construction lines

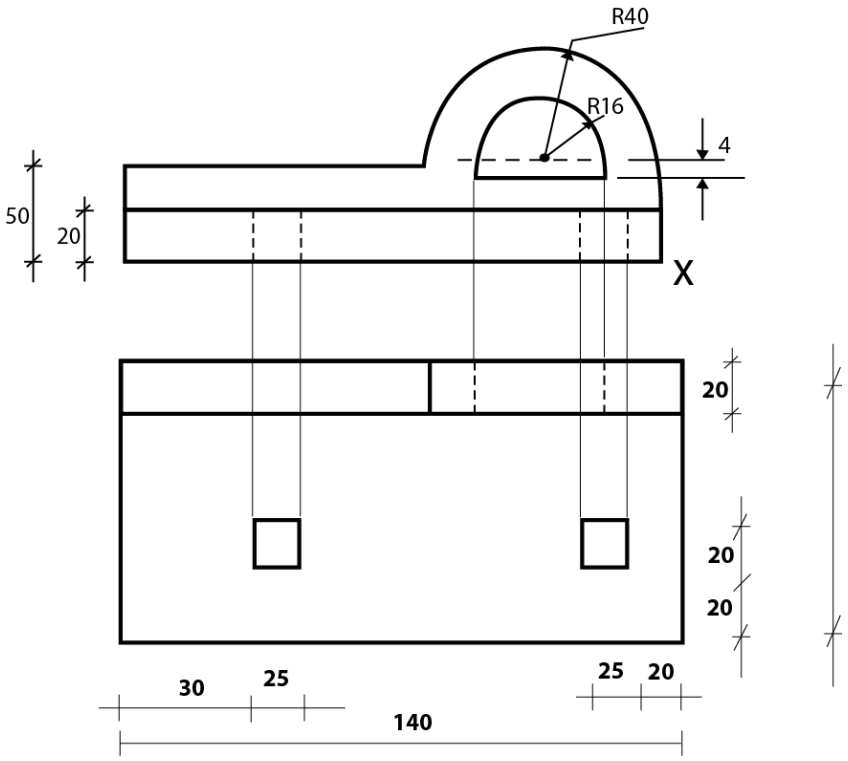


SECTION B Solid Geometry

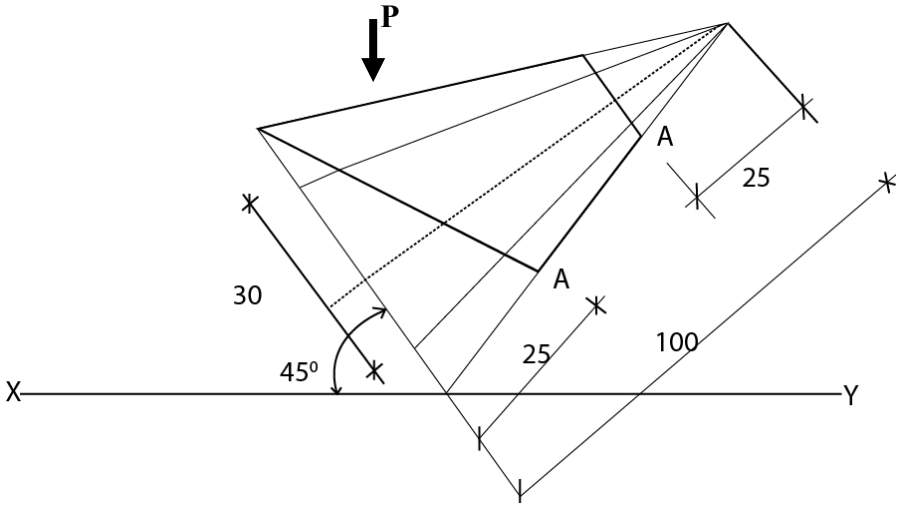
5. The figure shows the plan of a line AB. The elevation of the line has one end given as b. If the true length of the line is given as 108.
   (a) Draw the elevation
   (b) Determine the true inclination of the line to;
      (i) The horizontal plane
      (ii) The vertical plane
   (c) Determine the horizontal and vertical traces of the line



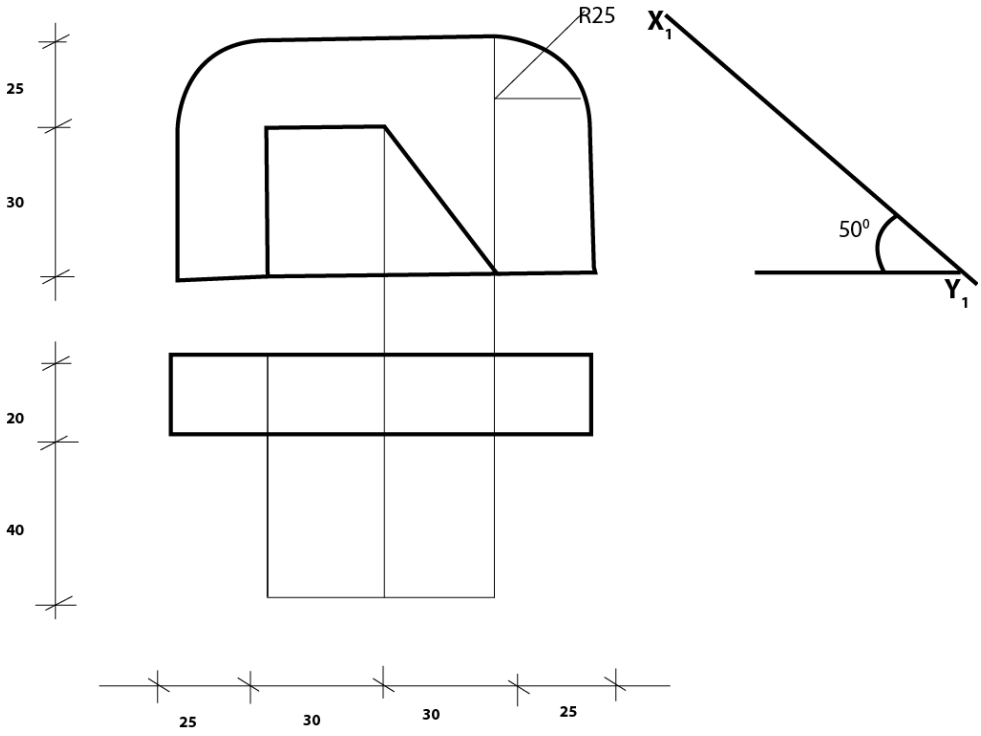
6. The figure below shows two orthographic views of a machined block; drawn in first angle orthographic projection. Draw full size an isometric view of the block, making x the lowest point.



7. The elevation of a hexagonal pyramidal lamp shade of side 30 is shown in the figure. Draw
   (a) The elevation as shown
   (b) A plan in the direction of arrow P in third angle projection
   (c) The development of the surfaces, taking the seam on A-A



8. The elevation and plan of a shaped block are in the figure
   (a) Copy the given views
   (b) Project an auxiliary elevation using X_1Y_1 as the ground line



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