

UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 1 Examination in Engineering: July 2017

Module Number: ME1201

Module Name: Engineering Drawing

[Three Hours]

[Answer all questions, each question carries 10 marks]

Q1. With reference to the object shown in Figure Q1, draw the following orthographic views using the Third Angle projection. (Note: all dimensions are in millimetres and you may assume any dimension not given)

a) Front view looking in the direction of arrow A.

[4.0 Marks]

b) Plan view.

[3.0 Marks]

c) Right side view.

[3.0 Marks]

Q2. Using the isometric scale, draw the isometric view of the object shown in Figure Q2. (Note: all dimensions are in millimetres and you may assume any dimension not given)

[10.0 Marks]

Q3. a) Draw a regular hexagon of 25 mm sides, with its two sides vertical. Now, starting from the centre of the hexagon, draw a circle of 20 mm diameter. Assuming the surface of the hexagon to be parallel to the vertical plane (VP), draw its projections when the surface is vertical and inclined at 40° to the VP.

[4.0 Marks]

b) Draw an epicycloid generated by a rolling circle of 60 mm diameter for one complete revolution. The radius of the directing circle is 100 mm. Show all the construction lines.

[6.0 Marks]

Q4. a) A fixed point is 100 mm from a fixed straight line. Draw the locus of a point moving in such a way that its distance from the fixed straight line is equal to its distance from the fixed point. Identify the curve and name it. Draw a tangent and normal to a point 50 mm below the major axis of this locii. Show all the construction lines.

[6.0 Marks]

b) Draw the locus of a point P moving so that the ratio of its distance from a fixed point F to its distance from a fixed straight line DD' is $3/7$. The point F is at a distance of 150 mm from the line DD'. Draw a tangent and a normal to a point 50 mm below the major axis. Show all the construction lines.

[4.0 Marks]

Q5. a) A sheet metal cone (base diameter 50 mm, height 60 mm), is truncated by an 45° inclined plane at 10 mm height from the left (see the front view given in Figure Q5(a)). Draw all the unfolded surfaces of the truncated cone.

[5.0 Marks]

b) A vertical cone (base diameter 60 mm and height 70 mm) is completely and symmetrically penetrated by a horizontal cylinder (diameter 40 mm and length 80 mm) at a height of 30 mm from the base of the cone (see the side view of the arrangement given in Figure Q5(b)). Draw the front view and the plan view of the penetration.

[5.0 Marks]

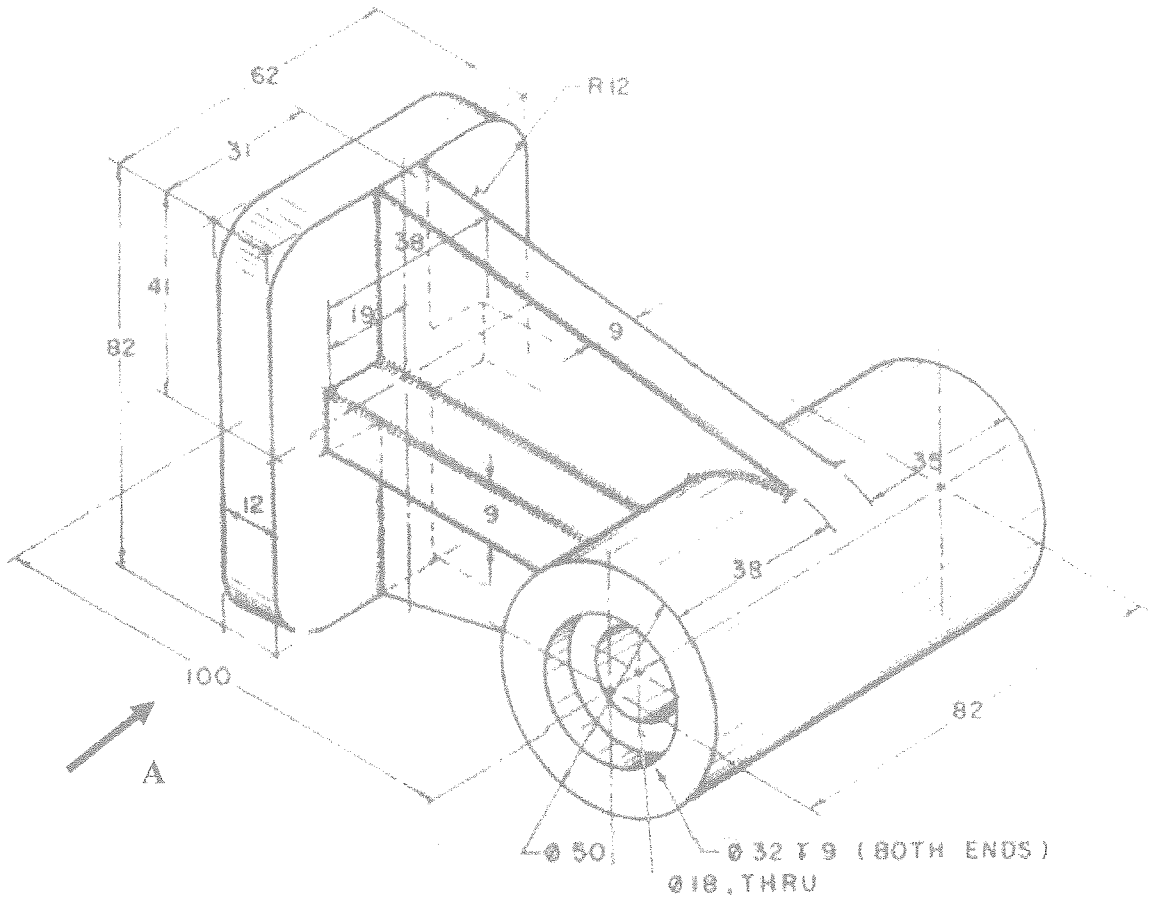


Figure Q1

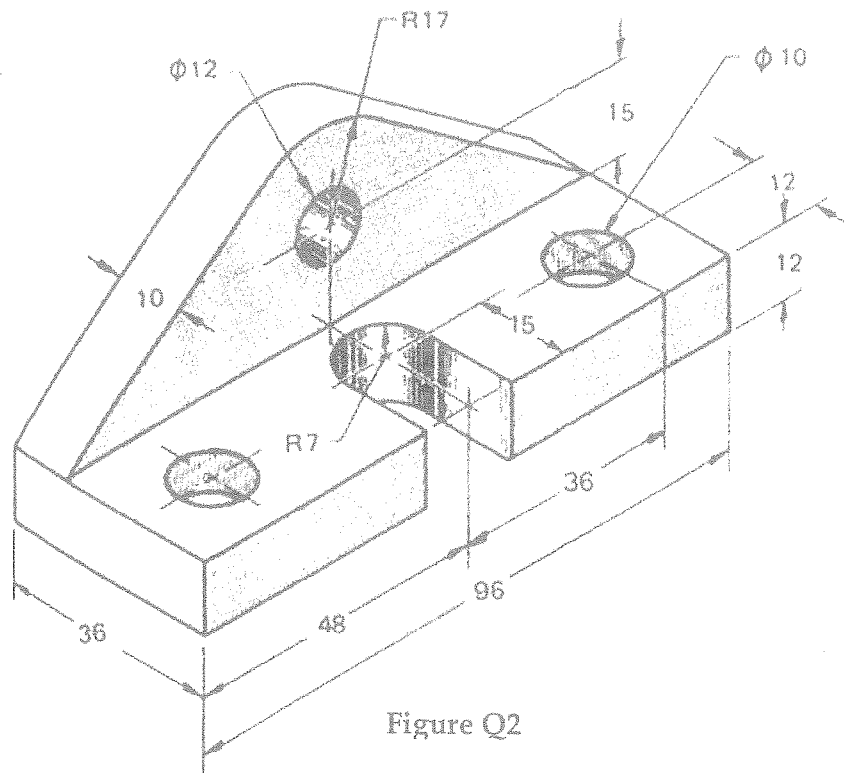


Figure Q2

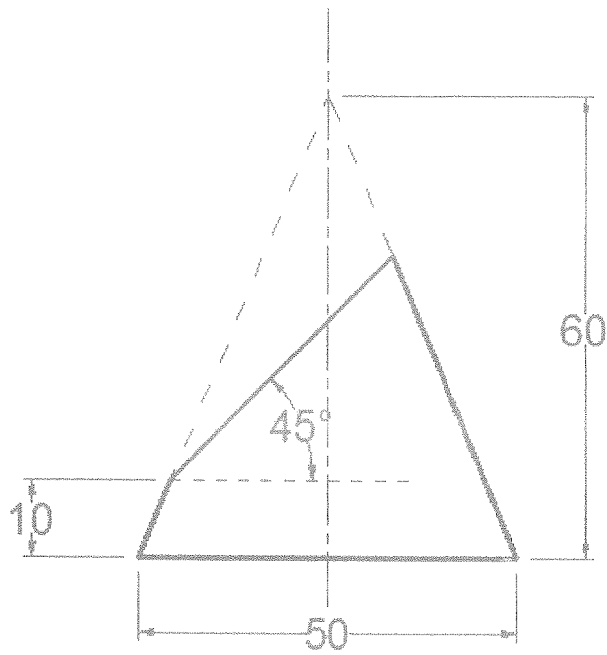


Figure Q5(a)

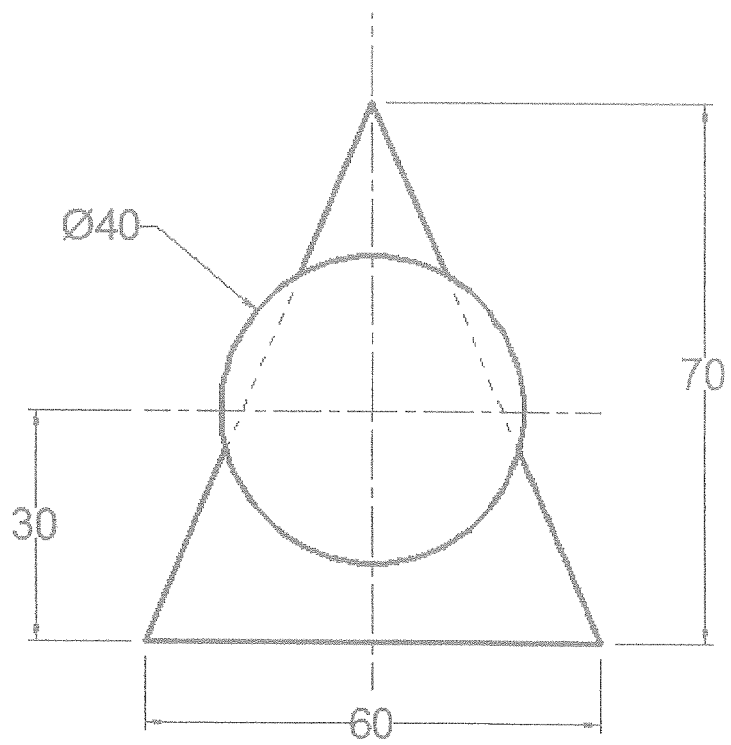


Figure Q5(b)