



# UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 1 Examination in Engineering: May 2022 (Proper)

Module Number: ME1201

Module Name: Engineering Drawing

[Three Hours]

[Answer all questions; each question carries 10 marks; all dimensions are in millimetres; assume any dimensions not given; use the given A3 sheets for drawing and you may draw on both sides; margins are needed in each sheet, however title block is required only for Q1.]

Q1. With reference to the object shown in Figure Q1, draw the following orthographic views using the Third Angle projection using an appropriate scale.

a) Sectional Front View across the symmetric cutting plane, which goes through the points P, Q and R, observed in the direction of arrow A.

[5.0 Marks]

b) Right Side View.

[5.0 Marks]

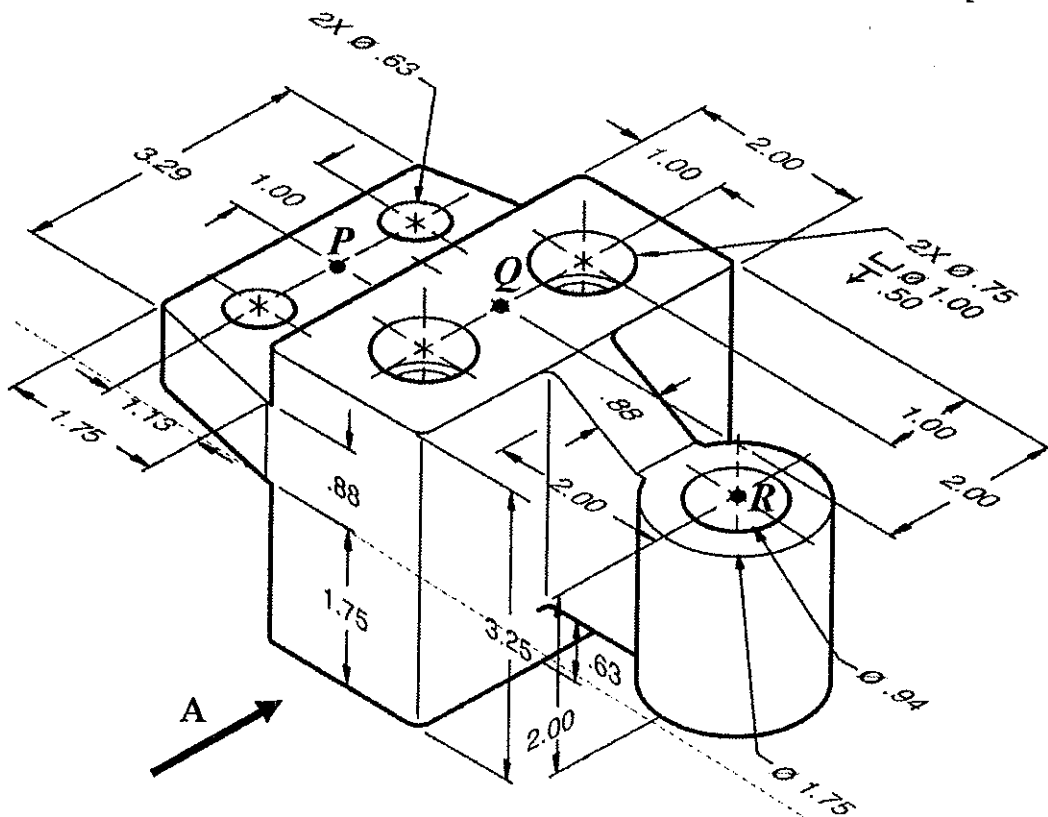


Figure Q1

Q2. Orthographic projections of an object drawn in the Third Angle projection are illustrated in Figure Q2. Use the isometric scale and draw the isometric view of the object looking in the direction indicated by the arrows A and B.

[10.0 Marks]

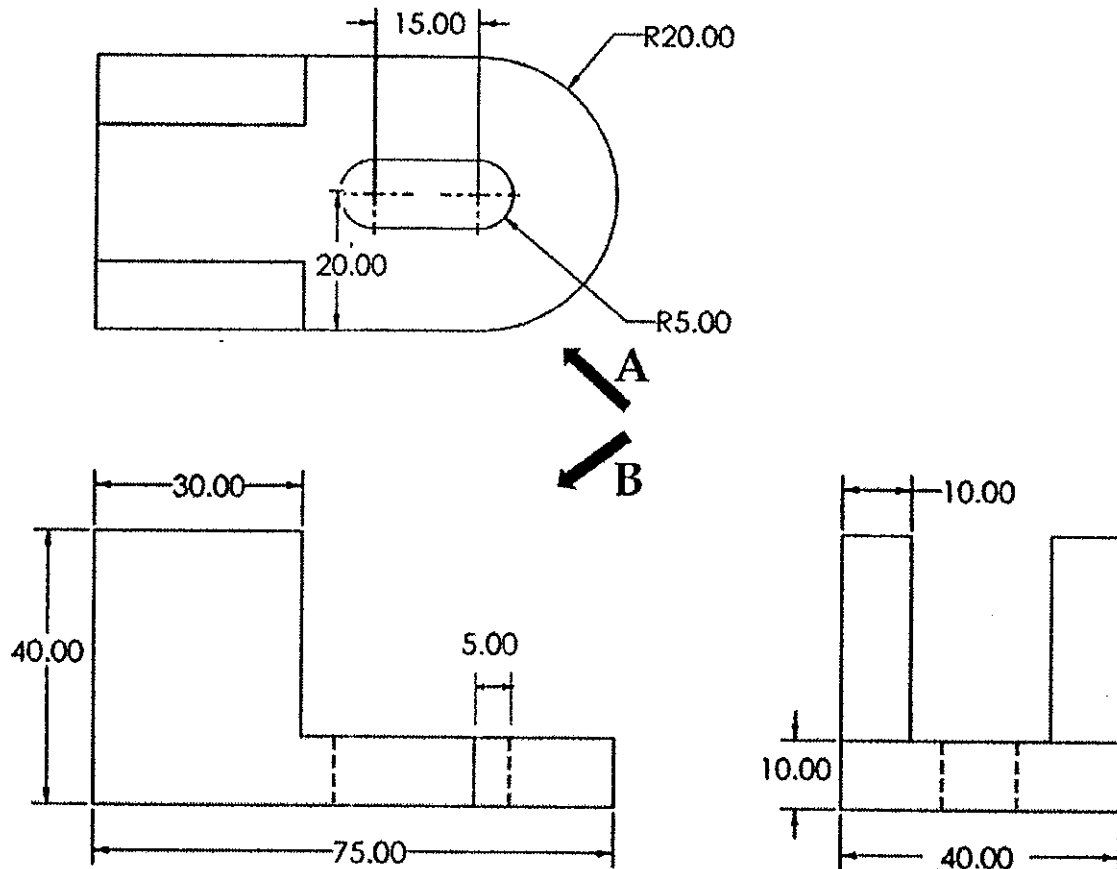


Figure Q2

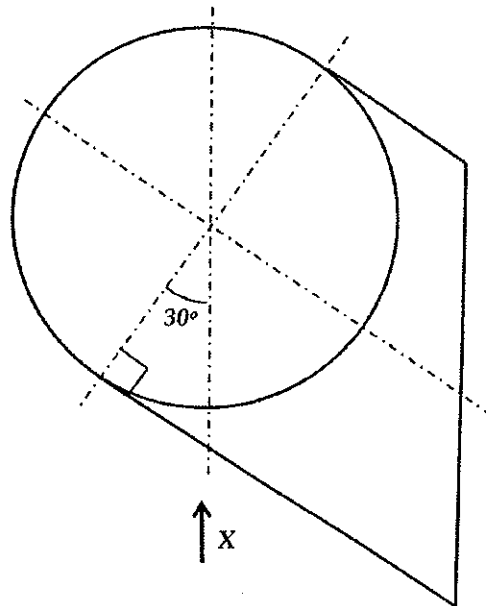
Q3. A vertical cylinder of diameter 100 mm and height 110 mm is resting on the horizontal plane (HP). It is joined with a horizontal cylinder of diameter 100 mm as shown in its Top View given in Figure Q3. The axis of the horizontal cylinder is at a height of 55 mm to the HP.

a) Draw the given Top View and the Front View projected in the direction of the arrow "X".

[2.0 Marks]

b) Draw the complete interpenetration curve indicating both visible and hidden parts.

[8.0 Marks]



TOP VIEW

Figure Q3

Q4. a) By providing all the necessary geometric constructions, draw an epicycloid generated by a rolling circle of 60 mm diameter for one complete revolution. Take the radius of the directing circle as 100 mm.

[5.0 Marks]

b) By providing all the necessary geometric constructions, draw an involute of a circle of 50 mm diameter.

[5.0 Marks]

Q5. Figure Q5 shows the Front View and the Top View of a four-sided sheet metal object which has a right triangular base ABC. Some of the key dimensions of this four-sided object are found to be:  $AC = 40$  mm,  $BC = 80$  mm and  $AD = 100$  mm. A cylindrical hole inscribing the triangle  $a'b'd'$ , with its axis horizontal and perpendicular to the vertical plane (VP), completely penetrates the object as shown in the Front View.

- a) Draw the given two views and the End View projected to the right of the Front View. Mark the points:  $a''$ ,  $b''$ ,  $c''$  and  $d''$ .

[3.0 Marks]

- b) Draw the development of the four-sided object ABCD taking the seams at CD and AB. Mark all vertices A, B, C and D on the developed surface.

[7.0 Marks]

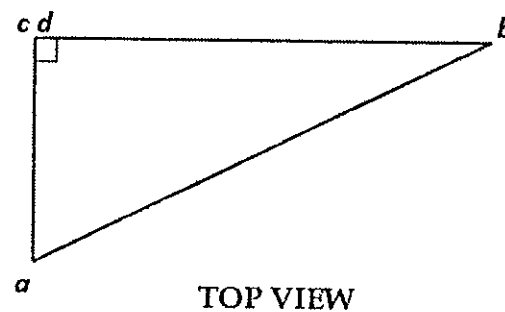
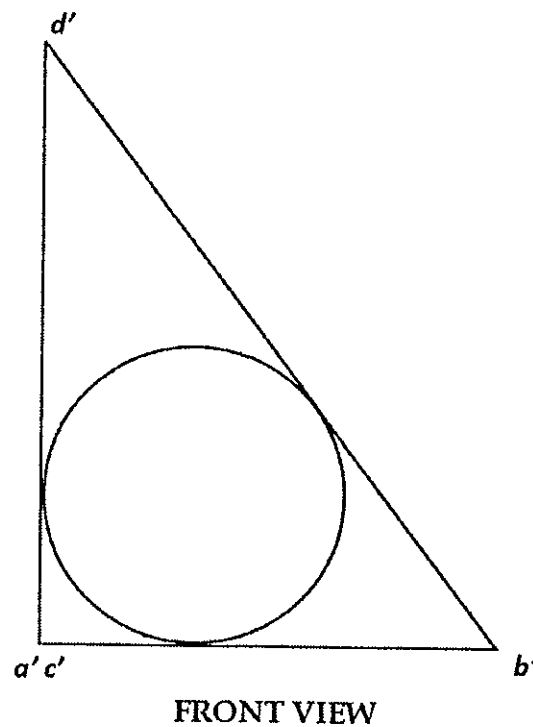


Figure Q5