



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 1 Examination in Engineering: October 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; page margins and the title block are required only for Q1.]

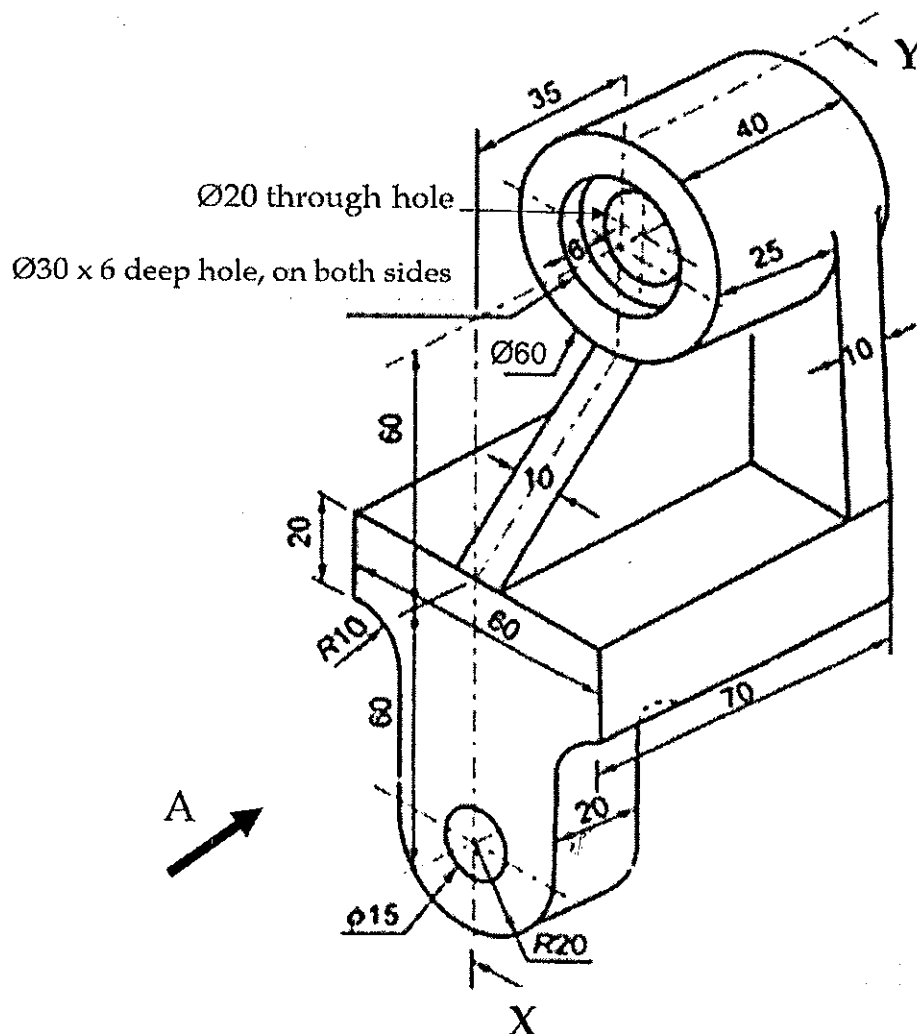
Q1. With reference to the object shown in Figure Q1, draw the following orthographic views using the Third Angle projection using an appropriate scale.

a) Front View observed in the direction of the arrow A.

[5.0 Marks]

b) Sectional Right-Side View across the symmetric cutting plane going through the sectioning lines indicated by the arrows X and Y.

[5.0 Marks]



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]

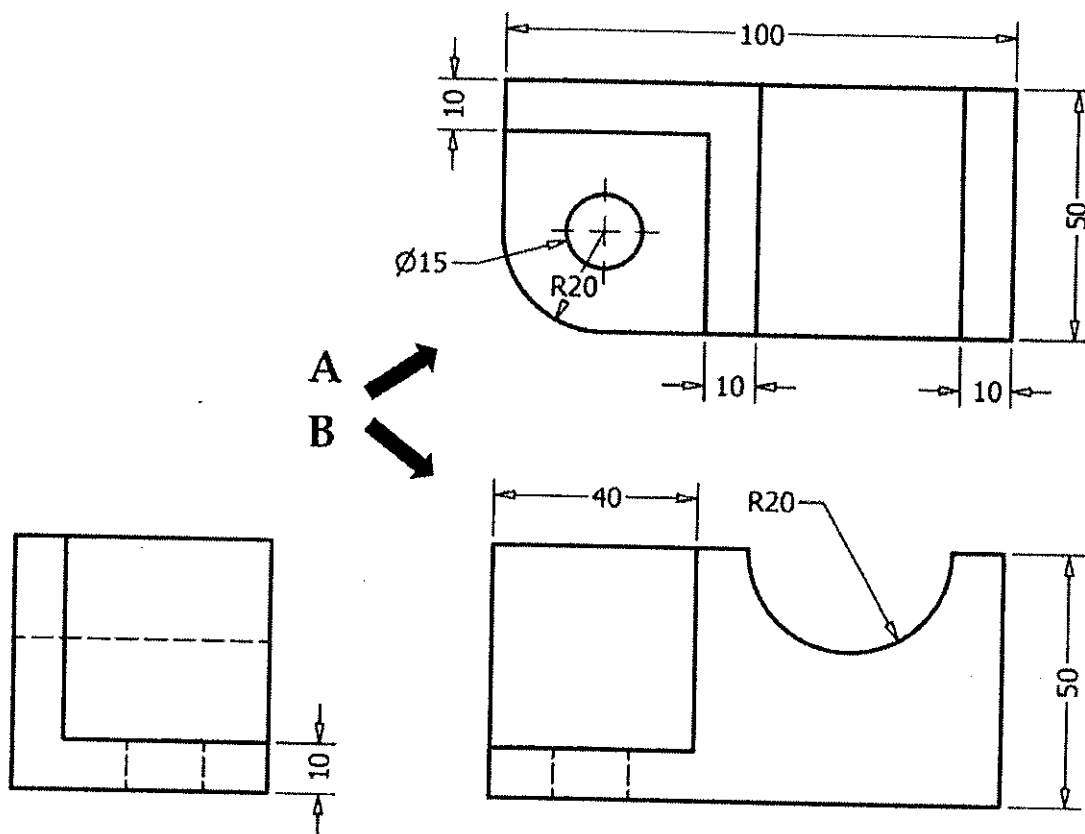


Figure Q2

Q3. A vertical cone of diameter 100 mm and height 100 mm is resting on the horizontal plane (HP). A triangular prism intersects the cone as shown in the **Front View** given in **Figure Q3**.

a) Draw the given **Front View**, **Plan** and the **End View** projected in the direction of the arrow **X**.

[3.0 Marks]

b) Draw the complete interpenetration curve in the **Plan** and **End View** indicating both visible and hidden lines.

[7.0 Marks]

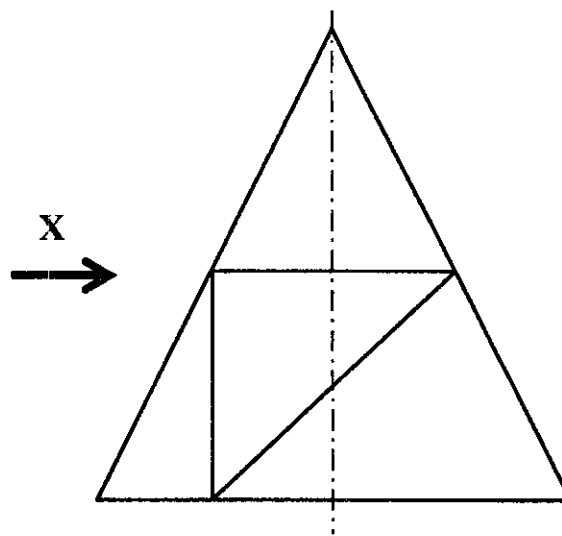


Figure Q3

Q4. a) By providing all the necessary geometric constructions, draw an **involute** of a **hexagon** of 25 mm side. Get **one side of hexagon as a horizontal line**.

[5.0 Marks]

b) By providing all the necessary geometric constructions, draw an **Archimedean spiral of 1.5 convolutions**, taking the smallest and the largest radii as 20 mm and 90 mm, respectively.

[5.0 Marks]

Q5. Figure Q5 shows the **Plan View** of a sheet metal transition piece required between a 80 mm diameter half cylindrical duct and a 80 mm X 60 mm rectangular duct. The height of the transition piece is 80 mm.

- a) Draw the given **Plan view** and project the **Front View** in the direction of the arrow Y.

[2.0 Marks]

- b) Divide the semi-circular arc of the transition piece into **six segments** and indicate the divisions in the **Plan and Front Views** with the usual notation. What are the plane sections that you may use to develop the transition piece?

[2.0 Marks]

- c) Draw the **complete development** of the transition piece using the plane sections that you identified in (b) above and remaining curved sections. Take the seam along the axis of the half cylinder.

[6.0 Marks]

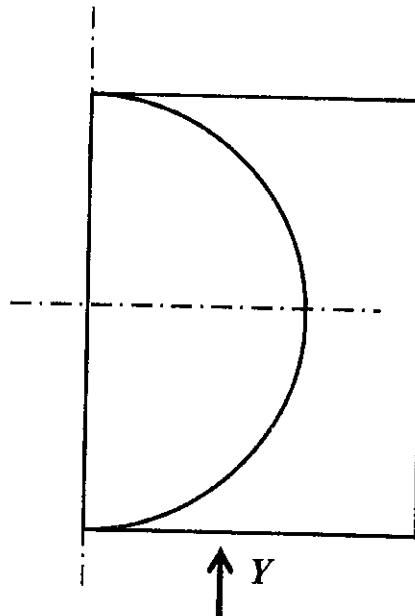


Figure Q5