

N.B.: - All questions are compulsory.

1. Figures to the right indicate full marks.
2. Assume suitable data if necessary and state it clearly.
3. Use of Non-programmable Calculator is allowed.

Question no 1 - Solve any one (a or b)

Q 1. (A) i) A vertical square prism with 50mm sides at its base, is completely penetrated by another square prism with 35mm sides at its base. The axis of the penetrating prism is parallel to both the reference planes, and is 8mm in front of the axis of the vertical prism, and is 50mm above the base of the vertical prism. It the side faces of both the prisms are equally inclined to the VP, and if both are 100mm long, draw three views showing lines of intersections. (8 marks)

(ii) A triangular prism, with 50mm side and 80mm length is standing on its base with a rectangular face parallel to the VP. It is penetrated by another triangular prism with 35mm edges on its base and an 80mm long axis. Draw the projections showing the lines of intersections if the two axes bisect each other perpendicularly and a rectangular face of each prism, which is away from the observer, is parallel to the VP.(7marks)

OR

(B) i) A square prism with 50mm sides at its base and an axis of 80mm length, is resting on its base with an edge of the base inclined at 30° to the VP. It has horizontal cylindrical hole of 50mm diameter cut through it. The axis of the hole is parallel to the VP and bisect the axis of the prism. Draw the projections showing the curves of intersections of surfaces. (8 marks)

ii) A vertical triangular pyramid, with 70mm edges at its base and the axis 80 mm long, is resting on its base with an edge of its base parallel to and nearer to the VP. It is penetrated by a horizontal cylinder, 40mm in diameter and 90mm in length. The axis of the cylinder is parallel to the VP, 25mm above the base of the pyramid and 10mm in front of the axis of the pyramid. Draw the projections showing the curves of intersection. (7 marks)

Question no 2 - Solve any one (a or b)

Q 2. (A) i) A circle of 50 mm diameter rolls on and in another fixed circle of radius 80 mm. Draw the epicycloid and hypocycloid for the point P on the rolling circle, which is at the contact point of the rolling and fixed circles. (7marks)

ii) Construct a parabola by rectangle method with the base dimension 140 mm and height 100 mm. And also draw the tangent and normal to the parabola at any suitable point. (8 marks)

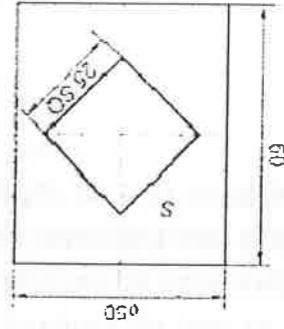
OR

B) i) Focal points of the ellipse are at 80 mm apart and the minor axis is of 60 mm length. Determine the length of major axis and draw the ellipse by concentric circle method. (7 marks)

ii) A circle of radius 35mm rolls without slipping on horizontal line for a half a revolution and then on a vertical line (downward) for another half revolution. Draw a curve traced out by a point P on the circumference of a circle. (8 marks)

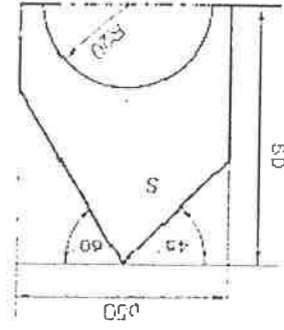
Question no 3 - Solve any one (a or b)

Q 3. (A) i) Figure shows the front view of cut section of a cylinder 50mm in diameter, has its axis perpendicular to the HP. Draw the development of the lateral surface of the remaining portion.



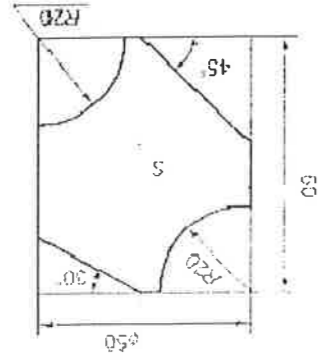
(7 marks)

ii) Figure shows the front view of cut section of a cylinder 50mm in diameter, has its axis perpendicular to the HP. Draw the development of the lateral surface of the remaining portion. (8 marks)

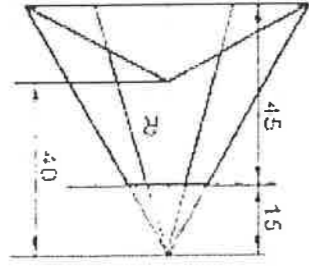


OR (P.T.O)

(B) i) Figure shows the front view of cut section of a cylinder 50mm in diameter, has its axis perpendicular to the HP. Draw the development of the lateral surface of the remaining portion. (7 marks)



ii) Figure shows the front view of cut section of a hexagonal pyramid with 40mm edges at its base, has its axis perpendicular to the HP and two edges of the base parallel to the VP. Draw the development of the lateral surface of the remaining portion. (8 marks)



Question no 4 - Solve any one (a or b)

Q 4. (A) Draw the section of following thread profile of nominal diameter 25mm each with pitch equal to 3mm incorporating all the parameter: 1) ACME thread, 2) buttress thread, 3) seller's thread. (8 marks)

(7 marks)

OR

(B) i) Draw the section of the following thread profile of nominal diameter of 25mm each incorporating all parameter: 1) V thread, 2) whitworth thread, 3) square thread. (8 marks)

ii) Explain minimum 10 types of welded joints and their standard symbols. (7 marks)