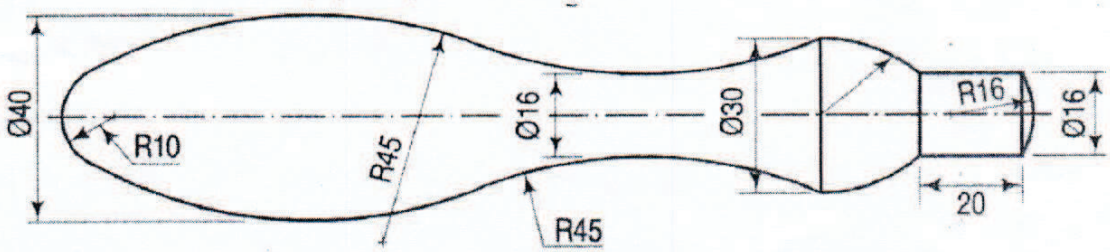
# Indian Institute of Technology Patna

## Engineering Drawing (CE111) - Mid-semester Exam Autumn 2015

Instructions:
*Answer the descriptive questions on the provided drawing sheet itself.*
*Use both sides of the drawing sheet.*
*Paper is of 2 hour duration.*
*Maximum grade is 40 points.*
*Clearly mention the scale used for each answer.*
*Make a standard sized title block and write your name and roll number clearly in it.*

1. Solve the following problems. **(10 points)**
   a. Draw the prescribed layout on the A3 sheet including margins, the title block, and all the associated details as per the instructions given in the class. *(2 points)*
   b. Draw a circle of radius 50 mm. On the circumference of this circle, draw two tangents such that the perpendiculars to the tangents make an angle of 60o with each other. Divide this angle into four equal parts. *(4 points)*
   c. Make an exact copy of the following drawing with all the dimensions and centreline. *(4 points)*




2. 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. **(10 points)**

3. Draw a helix, given an ant is moving on a vertical cylinder in a circumferential direction as seen axially from the top. If the diameter of the cylinder is 50 mm and the ant moves 75 mm in axial direction during one turn, draw the path traced by the ant. **(10 points)**

4. Solve the following problems. **(10 points)**
   a. Sketch the notations for first angle and third angle notation. *(2 points)*
   b. A point P is 50 mm from both the reference planes. Draw its projections in all possible positions. (4 points)
   c. State the quadrants in which following points are situated: *(4 points)*
      i. A point P; its top view is 40mm above xy; the front view, 20 mm below the top view.
      ii. A point Q, its projections coincide with each other 40mm below xy.

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6
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