

**FACULTY OF ENGINEERING & INFORMATICS**  
**B.E. I-Year (Common to All) (Suppl.) Examination, December 2013**

**Subject: Engineering Graphics**

**Time: 3 Hours**

**Max. Marks: 100**

**Note: Answer all questions of Part – A and answer any five questions from Part - B.**

**PART – A (35 Marks)**

1. Match the following: (4)
 

(a) For a reducing scale	(i) any two polygons passing through its axis
(b) Solid bounded by twelve equal and regular pentagons	(ii) Isometric projection of a circle
(c) Ellipse is an	(iii) Parabola
(d) Combination of two polygons which gives two intersection points	(iv) Dodecahedran
	(v) R.F < 1.0
2. How is the true length and true inclination of a line is obtained by the auxiliary plane method? Explain with a neat sketch. (4)
3. Draw the projections of a square plane, of size 40 mm, parallel to and 30 mm above HP. Its one side is in V.P. (3)
4. In the development of surfaces of a hexagonal pyramid, give the number of squares, rectangles, triangles and hexagons marked. (3)
5. State the various applications of intersection of surfaces. (3)
6. Explain the method of obtaining true shape of a section. (2)
7. Explain the principle of Vernier scale. (3)
8. Distinguish between an 'Isometric projection' and 'Isometric view' of an object and what is solids of Revolution? (5)
9. Inscribe a hexagon in a circle of 50 mm diameter. (4)
10. Draw an involute to an equilateral triangle of 30 mm side. (4)

**PART – B (65 Marks)**

- 11 (a) Construct an ellipse with an eccentricity of  $3/4$ . The distance of the focus from the directrix is 70 mm. Draw tangent and normal to the curve from a suitable point. (5)
 

(b) On a map, the distance between two points is 14 cm. The actual distance between the points is 20 km. Draw a diagonal scale to read this map in kilometers and hectameters. The scale should be long enough to read upto 25 km. Also show a distance of 17.6 km, 13.5 km, 10.0 km on this scale. (8)
- 12 (a) Plan and elevation of a line AB, 60 mm long, measures 54 mm and 45 mm respectively. End 'A' is 15 mm from H.P and 10 mm from VP. Draw the projections and determine its inclinations to the reference planes, when the line is in first quadrant. (8)
 

(b) Construct a hypocycloid for a rolling circle 50 mm diameter and directing circle 180 mm diameter. (5)
- 13 Draw the projections of a pentagonal plane, side 30 mm resting on the H.P. on one of its edges. The plane of the pentagon is inclined at  $45^\circ$  to the H.P. and the perpendicular drawn from the mid point of the resting edge makes an angle of  $30^\circ$  with the V.P. (13)
14. A hexagonal prism is standing in H.P. on one of its edges with this edge perpendicular to the V.P. The axis makes an angle of  $40^\circ$  with H.P. It is cut by a section plane that is perpendicular to both V.P. and the axis. The section plane bisects the axis. Draw its sectional views and true shape of the section. Base side is 40 mm, axis height is 65 mm. (13)
- 15 A right circular cone, diameter of base 50 mm and height 65 mm, rests on its base rim on H.P. with its axis inclined at  $45^\circ$  to it such that the top view of the axis, inclined at  $30^\circ$  to VP. Draw its projections. (13)
16. A right regular hexagonal prism, edge of base 25 mm and 60 mm long, lies on its rectangular face on ground plane. A right circular cylinder, of dia. 35 mm and 50 mm long, rests centrally on top rectangular surface of the prism. Draw isometric projection of the solids. (13)
17. Two pipes one of 25 mm diameter and another of 50 mm diameter are joined together. The larger size pipe is vertical and the smaller pipe makes an angle of  $45^\circ$  with the larger one. The axes of the pipes are 15 mm apart. Draw the projections of the pipes showing the curves of intersection. (13)

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